

Railway Age

contents listing

Vol. 80, No. 23

May 8, 1926

Table of Contents Appears on
Page 5 of Advertising Section

Train Control Maintenance

EFFICIENT inspection and maintenance of train stop and train control apparatus on the 45 roads now involved is very important in order to keep the full assignment of engines ready for service and to prevent unnecessary train stops on the road. The maintenance of this new equipment must logically be divided between the mechanical, electrical, signal, and, in some cases, the maintenance of way forces. Many of the roads are equipping the arrival and departure tracks at roundhouses with track elements or circuits so that running tests may be made. In some cases the tracks in the roundhouse are also wired and provision made for testing engines in the house. On several roads standard forms requiring written answers are used to record the tests made on each engine dispatched while periodic tests are also made of insulation resistance and the more delicate adjusting features on the locomotive apparatus. In addition to the usual test of signaling equipment the wayside train control circuits are also tested periodically, on some roads twice a month. Records of all these tests should be maintained to insure regularity and thoroughness in the testing, which in turn will insure the reliability necessary to inspire confidence in the train control equipment on the part of the enginemen. Such a program will go farther in establishing the practical operation of trains under train control protection than the mere enforcement of the law. During the past winter some of the roads learned that the practice of "shooting trouble" on train control apparatus was by no means as satisfactory as carrying out a definite schedule of tests and maintenance that anticipated and prevented trouble and resultant train delays. Especially at this stage of development of train control those responsible should provide the proper facilities for its testing and maintenance.

The Deficits of an Optimist

A NEW solution of the so-called "weak-railroad" problem is suggested by a perusal of the annual report of the Inland Waterways Corporation just issued. Let General T. Q. Ashburn write their annual reports and the deficits and losses would be transformed, or at least translatable, to profits and gains in a twinkling. The general cares not who keeps the books so long as he can write the reports. Although the statements of the secretary-treasurer of the corporation appended mention an operating loss of \$8,878 for the Mississippi-Warrior service for 1925, a "net loss" of \$34,519, and a "total loss" of \$65,214, under which head he includes operating loss, loss on equipment retired and the expenses of the Washington office, which General Ashburn would not call a loss by any means, the general finds in these figures a "gain in net income" of \$498,091, because the loss was less than it was the year before. He also says the corporation expended

in actual operations \$298,191 less than its gross income, this latter figure being explained by the secretary-treasurer's statement as "income before charging depreciation" amounting to \$332,711. The depreciation is mentioned in another place as being included in "charges against profits which required no expenditure of funds" so that although the net profit and loss debit balance was increased during the year by \$65,214, there is reported an item of \$325,601 of "funds obtained from operations of the current year." We understand that General Ashburn prefers not to be judged with too much reference to the operating accounts, but rather on the basis that he is engaged in creating "conditions precedent" to successful operation of waterways by private capital. However, particularly as he refers so many times in his report to the business-like methods of his corporation, why should it be necessary for a government corporation which has to pay no taxes or interest on its investment to ignore accrued depreciation in order to make up a statement of profits and gains for demonstration purposes?

The Lesson of the Strike in Britain

THE British labor movement and British industry are facing a situation involving grave danger, not to say the possible destruction, of both. What is the lesson which American labor and American industrial leaders can learn from the plight of their fellows across the sea? British labor has attained to great power without, recently at least, a very hard fight against it on the part of industrial leaders. However, despite this power, British labor works for wages which are, according to our standards, miserably low. American industry has constantly improved its efficiency—largely by heavy capital expenditures for better machinery, which have increased the productive capacity of the individual worker and enabled the payment of higher wages. The contented workman who realizes that he is well provided for under the existing organization of industry is poor material for socialist agitation. In Britain, on the contrary, less has been done to show the workman that prosperity for him and prosperity for his employers are entirely compatible, and indeed in the long run are mutually dependent. The British labor leaders realize that industry is not at present prospering and yet they seek to attain advantages for themselves by further wrecking it. Is it not plain that the fallacy of this labor statesmanship lies in the fact that it is based on "class consciousness"—a doctrine which commands "Fight!" where peace alone can bring plenty? Some may be inclined to blame British industrial leaders for ever allowing labor organizations to become so powerful. However, suppression was the policy in Russia, but in Russia also the doctrine of "class consciousness" won. And is it not this doctrine rather than either too great freedom or too stern repression which is to blame in both Britain and Russia? American labor unionists and industrial leaders

may congratulate themselves on the fact that on this side of the Atlantic there is a growing tendency on the part of capital and labor to consider themselves on the same side of the fence rather than as unrelenting and necessary enemies. Our industrial relations problem, slight though it be by comparison, does not, however, call for complacency. Rather, we should be inclined to intensive self-observation—as working men never to lose sight of our dependence upon capital; as industrial leaders never to forget that our responsibility to secure continued prosperity for our employees is definitely a part of our duty.

Making Station Signs Legible

EUROPEAN visitors who spend any time in this country are generally impressed with the intensity of local pride and enthusiasm. Most Americans, be they from a city of millions of inhabitants or a little hamlet of 200 souls, stand ready 24 hours a day to tell all comers of the charms and advantages of their particular habitat. "The healthiest community in the United States"—"Zenith produces more shoes (or more cheese, or more machine tools, or more locomotives or more printed matter, etc.) than any other city in the country"—"Addenda—the city of beautiful homes"—such slogans are common in this country of ours and reflect a very genuine feeling on the part of large numbers of our people. Is it not rather strange, therefore, that when trains pass through many of these important places passengers have such limited opportunities of learning in what interesting localities they are. Perhaps there is one station sign—maybe even more. But frequently, these signs are either so small that they cannot be read when a train is moving rapidly or they are so placed as to require a fore-knowledge and considerable attention on the part of the passenger who desires to read them as he passes. At night the situation is generally even worse. Signs which are difficult to locate or are too small to be easily legible in the daytime generally fade completely out of the picture by lack of illumination at night. It is not likely that a little additional effort to make the names of stations more legible would be highly appreciated, not only by passengers, but by the communities along the line as well?

More Action Is Needed

WOULD a railway tolerate the action of one of its inspectors at a rail mill who accepted rails of 90-lb. section when those of a 100-lb. section were ordered, merely because it was more convenient for the mill to roll the smaller section? Would it acquiesce in his action in ignoring the chemical requirements because the ore that the mill might have in stock did not comply with the specifications? These are idle questions when applied to rails. Yet similar and equally pronounced deviations from the specifications of ties, both as to size and quality of material, are widespread on many roads without causing any appreciable comment or concern. It is true that infractions of the tie specifications may not exert as direct an effect on safety of operation, but it is equally true that they exert a much greater effect on economy of operation. One need make only a limited examination of the ties now being inserted in the track or seasoning at concentration points awaiting treatment on many roads to be convinced of the wide deviation of the finished product from the specifications under which it was bought. Such deviations show that the roads are not getting what they are paying for. This condition is a reflection on the

character of the inspection and on its supervision. But the responsibility does not rest solely there. No small part of it lies with engineering officers who are responsible for track maintenance and who condone this condition. Ties constitute their largest material expense. Because of this fact it is their duty to their managements to insist that they get those ties that will give them the most economical maintenance. It is not enough that they prepare specifications for their ties. It is equally necessary that they see that the ties furnished them comply with the specifications. Until engineering officers interest themselves sufficiently in this subject to know the character of the ties available in the markets and the quality of the ties actually furnished them, it is not to be expected that the purchasing department will take a greater interest in the problem of strict enforcement of specifications and careful selection of timber. The first and most important responsibility for securing the proper quality of ties rests with the users—the maintenance of way department.

The Western Rate Case

ALL the testimony has been taken and the briefs filed in the western freight rate advance case. The oral arguments will begin next week. There is much more involved in this case than a five per cent advance in western freight rates. It presents as clearly as any case could the question whether the Interstate Commerce Commission will give to the rate-making provisions of the Transportation Act the interpretation and effect it was plainly intended they should be given when they were enacted. In whatever way the Commission decides, its decision will have a great influence on the future of the railways.

The commission granted a general advance in rates to all the railways in 1920. It made a general reduction in freight rates in 1922. It believed the rates then established would prove to be adequate. They have had a complete test. The railways of all the three large territories failed until recently to earn 5½ per cent on their tentative valuations and the western railways are still failing to do so.

Measured by the commission's own standard the western railways have proved every fact necessary to support the proposition that the general level of their rates is too low. They have shown not only that their properties are being honestly, economically and efficiently operated, but that they are being more efficiently operated than ever before. They have shown that their tentative valuation certainly is not too high, and that probably it is too low. They have shown that in no year has the aggregate net return earned by them approached 5½ per cent on their tentative valuation, and that there is no reasonable prospect of any change in operating expenses or earnings that would enable them to earn this much without an advance in rates. They have met squarely the claim that their failure to earn a fair return is mainly due to inadequate passenger revenues, and have shown that there is no practical way for them sufficiently to increase their net operating income through changes in their passenger rates or service.

The strongest opposition to the advance in rates has been made by men assumed to speak on behalf of the western agricultural interests. It has been claimed that the Hoch-Smith resolution was intended to instruct the commission to reduce freight rates on farm products and that the western lines sought a general advance in rates to forestall this. But as the railways have pointed out in their briefs, the Hoch-Smith resolution directs that in making any readjustment of rates the commission shall

give due regard, among other things, "to the maintenance of an adequate system of transportation," and furthermore that it leaves in full effect the rate-making provisions of the Transportation Act. Now, the rate-making provisions require the commission to so adjust rates as to enable the railways to earn as nearly as may be a fair average net return annually. Therefore, whatever the Hoch-Smith resolution may mean, it does not relieve the commission of its lawful duty to so adjust rates as to enable the railways to earn a fair return in order that the country may be provided with an adequate system of transportation.

In view of the plain provisions of law under which it acts, and of the incontrovertible record of facts, it would seem that the commission must render a decision that will enable the western lines to earn a larger average net return. It is expected that the general level of rates established by it in 1922 would in due course produce a fair return. That has not been the result. In other words, the commission was wrong then. It can do justice as between western shippers and railways now only by making an advance in rates that will restore to the railways part of the earnings of which the reduction of rates in 1922 deprived them. Any other action on its part would largely destroy the confidence in the future of the railways inspired by the rate-making provisions of the Transportation Act.

The western lines are entitled not only to a decision in accordance with the law and evidence, but to an early decision. During the years 1921 to 1925 inclusive, they failed by almost \$600,000,000 to earn what the commission itself held would be a fair return. They failed according to the commission's own standard by \$73,000,000 to earn a fair return in 1925. Advances in wages to employees repeatedly have been made retroactive. Changes in rates are not made retroactive. Therefore, every day determination of this case is delayed the loss unfairly borne by the western roads will be increased. Every consideration of justice and public expediency calls for an early decision.

Efficiency of Operation Continues to Increase

THE increase in railway operating efficiency in the five years ending with 1925 was unprecedented, but it is being continued without abatement in 1926. The average weight of freight trains and the average speed with which they are moved considered together constitute one of the best measures of operating efficiency. Average gross tons per train multiplied by the average distance each train is moved hourly gives average gross ton-miles per train-hour. This figure—average gross ton-miles per train-hour—for the first two months of 1925 was 17,990, the best record ever made in these two months up to that time, but for the first two months of 1926, it was 19,021, an increase of almost 6 per cent.

In the first two months of 1920—which were the last two months of government operation—average gross ton-miles per train-hour were 13,544. Measured by this standard the operating efficiency of the railways in the first two months of this year was 40 per cent greater than in the last two months of government control. The increase in gross tons per train over the first two months of 1920 was from 1,341 to 1,630 tons, and the increase in the average speed was from 10.1 to 11.7 miles per hour.

These increases in the average loading and the average speed of freight trains have been going on almost continuously ever since the railways were returned to private

operation. The increase in the average speed of trains was interrupted by the effects of the shop employees' strike in 1922, but it was resumed as soon as the effects of that strike were overcome. There was, also, a small decrease in average gross tons per train in 1921 owing to the slump in freight business and to the large number of cars hauled empty in returning them to their owners.

In 1920, the average freight train contained 36.6 cars, weighed 1,443 tons (excluding locomotive and tender) and moved 10.3 miles per hour. In 1921, the average freight train contained 38.4 cars, weighed 1,435 tons and moved 11.5 miles per hour. In 1922, the average freight train contained 38.5 cars, weighed 1,464 tons and moved 11.1 miles per hour. In 1923 the average freight train contained 39.9 cars, weighed 1,539 tons and moved 10.9 miles per hour. In 1924 it contained 41.7 cars, weighed 1,588 tons and moved 11.5 miles per hour. In 1925 it contained 43.8 cars, weighed 1,670 tons and moved 11.8 miles per hour. The average gross ton-miles per train-hour in 1920 were 14,863; in 1923, 16,775; in 1924, 18,257; and in 1925, 19,679. Therefore, the increase in 1925 over 1920 was 32 per cent; over 1923, 17 per cent and over 1924, 8 per cent.

In achieving this increase in operating efficiency the railways have had constantly to overcome an adverse influence of great importance. This has been the decline in average tons per loaded car which has been due mainly to the fact that the volume of high grade freight which is loaded less tons to the car has increased more in proportion than other kinds of freight. Average tons per loaded car in 1920 were 29.3, while in 1925 they were only 27.0, the smallest figure since 1918, excepting that for 1922. In spite of the decline in average loading per car the railways have so increased the number of cars per train and the average speed of trains that there has been a steady increase in the average amount of freight service rendered by each train in each hour. The number of tons of freight carried one mile in each hour by the average train in the year 1920 was 7,292, and in 1925 it was 8,779, an increase of 20 per cent. The figure for the first two months of 1920 was 6,707 and for the first two months of 1926 it was 8,611, an increase of almost 30 per cent.

The foregoing figures should be of interest to the public as well as to railway men for several reasons. To some extent they explain the speeding up of the movement of freight which, by enabling business concerns to reduce their inventories, has had such a beneficial effect upon the entire business of the country. What is far more important is that they largely explain the great economies in operation which have enabled the railways to increase their net operating income since 1922 in spite of the large reductions of freight rates that were made in that year and of advances in wages and further reductions of rates that have been made since then.

In some states the labor unions have renewed their efforts to secure legislation which would reduce and limit the length of freight trains. This legislation is advocated on the ground that it is in the interest of safety of operation. This argument is entirely fallacious because increases in the length of trains—especially when the speed with which they are moved is maintained, or, as has been the case, is actually increased—promote safety by reducing the number of trains that otherwise would have to be operated to handle a given amount of business.

The principal reason why train limit legislation is objectionable, however, is that it would reduce and largely prevent further increases in the economy of operation. The public would have to bear the cost of this interference with increases in economy of operation in the freight rates that it must pay.

An Example of Senatorial Rate-Making

A SENATE debate on the long-and-short-haul clause is always a curious spectacle, but the debate which ended in the defeat of the Gooding bill was complicated by one who ought to have known better. Much legislation fails of its purpose because Congress does not always say what it means or what it thinks it means. In this case Senator Cummins, who has long made a study of transportation questions and has more or less specialized in the subject in recent years, says that when the last amendment to Section 4 of the commerce act was written he intended something far different from what the Interstate Commerce Commission says the language he used means, and the advocates of the bill seized on his statement as an argument to show that the commission has gone out of its way to help the railroads in their nefarious schemes to make discriminatory freight rates.

Section 4 gives the commission discretion to allow the railroads in special cases to charge less for a long haul than for a short haul, as for the purpose of meeting water competition at the more distant point which does not prevail at the nearer point. When the Transportation Act was passed a proviso was inserted that the lower rate for the longer haul must be "reasonably compensatory." The commission interpreted these words to imply that a rate properly so described "must cover and more than cover the extra or additional expenses incurred in handling the traffic to which it applies"; in other words that it must more than cover the "out-of-pocket" cost, so that it would create no loss to be borne by other traffic.

However, one of the chief arguments of the advocates of a strict long and short haul rule is that the railways deliberately make discriminatory rates for the benefit of favored communities and make up their losses by charging higher rates to the intermediate points. And Senator Cummins has given them aid and comfort (although he was absent when the vote was taken) by saying that he was the author of the words "reasonably compensatory" when they were put into the transportation act, that he did not mean what the commission says his language means, that he explained his view in the Senate when the law was enacted and that in view of the action of Congress in 1920 the Interstate Commerce Commission "ought to have given a different construction or interpretation to the words."

In a discussion with Senator Fess in the debate on the Gooding bill he said that "reasonably compensatory" should be construed to mean "fully compensatory" and that when the fact is recalled that Congress in the transportation act had stated that rates should be so adjusted as to produce a "fair return," "no one could misunderstand the consequence of the provision in section 4 that the rate should at all events contribute its share toward the return that we had provided the railroads should enjoy." Senator Cummins, of course, is too much of a lawyer to expect a statute to be construed according to what he said he intended if he failed to say what he meant. However, if it were intended that a railroad should not be allowed to make any rate to meet water competition less than a fully compensatory rate, what was the object of giving the commission any discretion in the matter at all? During most of the time since the Transportation Act was passed rates in general have not been fully compensatory to many railroads, yet a lower rate that would put some freight into empty cars, without reducing rates on which traffic was already moving, might help considerably toward producing a return.

Senator Lenroot made a pointed remark during the debate when he said: "If the law requires the rate on a long haul to be fully compensatory, and at the same time permits a higher rate than that at the intermediate point, the law would authorize an unreasonably high rate at the intermediate point, beyond the power of Congress to authorize it."

And now Senator Gooding has come along with two new bills, one to confine the prohibition of fourth section relief to rates made to meet water competition via the Panama canal, and another to define "reasonably compensatory" to mean enough to pay "cost of service, interest on bonds, and then some dividends."

At the rate he is going he will soon reach the point of proposing to guarantee dividends to the transcontinental railroads so they can run free excursions to Idaho for capitalists desiring to develop that state and give free transportation for its outgoing and incoming freight, in order to allow it the full benefit of its geographical location. The Senate is to be congratulated on its decision not to go into the business of rate-making itself.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

The Beginnings of the New York Central Railroad—a History, by Frank Walker Stevens. History of the early New York railroads that were consolidated to form the New York Central of 1853. Serial publication of this book began in the April, 1926, issue of the New York Central Lines Magazine. 408 p. Pub. by G. P. Putnam's Sons, New York City.

Motor-Bus Transportation. Part II—Canada and Latin America, by H. C. Schuette. Part I—Europe, was included in the book-list for April 10. Like it, this report is based on reports from consular and other officers abroad. U. S. Dept. of Commerce. Trade Information Bulletin No. 404. 62 p. Pub. by Govt. Print. Off., Washington, D. C. 10 cents.

Our Times—The United States 1900-1925. Vol. I, *The Turn of the Century*, by Mark Sullivan. How the railroads revolutionized living conditions, p. 418-419; picture of first refrigerator car, p. 419; railroads in 1902, p. 579. "Browsing thru" this volume yields other interesting items such as reduction in running time between New York and Chicago, and the start of the Pennsylvania tunnel into New York. 610 p. Pub. by Charles Scribner's Sons, New York. \$5.00.

The Story of Western Railroads, by Robert E. Riegel. An outline history of the finance and extension of western lines. 345 p. Pub. by Macmillan, New York City. \$2.50.

Periodical Articles

The American Labour Movement and Scientific Management, by Paul Devinat. Early reaction to Taylor's practices and later industrial co-operation as exemplified in the Baltimore & Ohio Plan. International Labour Review, April, 1926, p. 461-488.

Fuel Organization on a Large Railroad, by Robert Collett. On St. Louis-San Francisco Railroad. Coal, April, 1926, p. 206-208.

How Rails and Motors Pull Together, by Alfred P. Sloan, Jr. Practical co-ordination of transportation. Forbes, May 1, 1926.

Malaria and the Mosquito Fish, by Dr. David Starr Jordan. Of interest to sanitary departments which have a malaria control problem, since it reviews experiments with various kinds of mosquito eating fish and particularly the successful results with "Gambusinos" "the greatest mosquito killer in existence." Scientific American, May, 1926, p. 296-297.

The Purchase of Coal by Railroads, by J. F. Manning. Kinds of coal purchases for various uses and methods of purchase outlined. Coal, April, 1926, p. 208-210.

Who Owns America? by John T. Flynn. Contrasts diffusion of stock ownership, particularly of railroad stock ownership at the present time, and in prior years. Harper's, May, 1926, p. 753-762.

Letters to the Editor

[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated. The editors do not hold themselves responsible for facts or opinions expressed.]

Answering Mr. Tirrell

FROM THE RANKS.

To THE EDITOR:

In the *Railway Age* of April 24 there was published an article entitled "Large Savings in Avoiding Surplus Material" in which the author, William W. Tirrell, presented in tabular form a list of 68 Class I railroads with their statements of operating expenses and reports of the value of material and supplies carried on hand at the close of the years considered, and showed that by applying the measure employed by the Interstate Commerce Commission in arriving at the amount of supplies which a railroad should carry, the majority of the roads were carrying excess material in stock and that the excess for the 68 roads amounted to approximately \$158,000,000 at the close of 1924.

In reading Mr. Tirrell's article I am more firmly convinced than ever that comparisons of railway material balances on the basis of operating expenses or any other basis than the months' supply on hand are unfair. On the basis of operating expenses a company very uneconomically operated might stand at the head of the list, with reference to the ratio which its material and stock afford to total operating expenses. Insofar as the road with which I am connected is concerned, for example, the figures in the table, while official figures, nevertheless represent only the operating expenses of the major portion of the road, while the figures for the stock on hand comprise not only the stock on hand for this property but include rail, ties and coal for some of the minor system lines. The omission of the annual operating expenses of these smaller lines is a factor that influences the comparison.

I assume that this condition applies likewise to a number of other railroads, and unless it applies proportionately the comparisons are not equitable.

To be fair, moreover, comparisons on this basis should be divided with reference to such matters of policy as the purchase of rails, ties and coal. By way of emphasizing this point the writer knows of one or two railroads in the tabulations referred to that stand up very well in the ratios in the tables that never carry over 3 to 5 days' supply of fuel, whereas by way of illustration again, the road with which I am connected carried approximately a three-months' supply of coal December 31, 1924.

In developing his tables Mr. Tirrell assumed that the normal supply of a railroad should represent approximately 10 per cent of its operating expenses. I am in no way convinced that this is a fair figure nor can I understand how such a figure could be arrived at without giving due consideration to the geographic location of the railroad and to market conditions. The only fair basis for comparing railroads with reference to their material and supply conditions is the number of months' supply stock carried on hand and the problem is to bring about those improvements on railroads as will make this meas-

ure more useful for such purposes. When it is stated that the 68 railroads included in Mr. Tirrell's article had \$158,000,000 excess material in stock I am satisfied that a proper method has not been employed and I am fearful that the excess is much overstated. Some of the railroads showing up the worst in this article are roads which for years have been referred to as the most competently and efficiently organized.

In arriving at the efficiency with which material and supplies are handled on various railroads, the importance of systems of accounting cannot be overemphasized. That a difference in accounting methods on railroads is consequential is brought out by Mr. Tirrell himself. It is interesting that nothing in recent years has prompted improved organization for and better control of material more than poor records in accounting found in existence at the time of settlement with the government under the federal control act. Progress has been made in this direction but much still remains to be done. Division VI—Purchases and Stores—of the American Railway Association has outlined methods which, if properly maintained, are the beginning of proper control, but individual roads must go further than this and use the principles laid down as a stepping stone to their individual problems. With the annual investment and carrying charges for materials and supplies as high as they are (about \$650,000,000 a year and \$100,000,000, respectively) truly comparative statements among railroads for measuring the supply department's cost of operation, etc., are desirable, but their lack is one of the outstanding weaknesses of material control at the present time. Before any comparisons can be made it is necessary that the figures representing material balances be developed on a uniform basis which is not true today.

Some of the most important of these differences at the present time may be summarized.

In the first place the material which is to be used on the lines of the railroad, such as rail, ties, etc., is charged directly to operating expenses on some roads immediately when shipped, while on other roads it is carried in the material and supply account until it is applied. It is my opinion from such information as I have been able to gather that about 12 to 15 per cent of the railroads of the United States charge this material direct to operating expenses immediately upon its shipment.

A second important difference lies in the method by which railroads credit scrap to operating expenses. Some railroads credit operating expenses with the amount of scrap collected as soon as the scrap is shipped to the stores department while others credit operating expenses with the value of scrap collected only when the scrap is sold. Approximately 10 per cent of the railroads credit scrap to expenses when it is sold while 90 per cent do so when it is released.

A third difference in accounting among railroads, lies in the values which are placed on material which is returned to the stores department, either direct or from scrap but which is still in serviceable condition, the value of this material ranging from the scrap value to the prices which would be paid for new material. The lack of uniformity in this respect is one of the most troublesome features of the accounting situation at the present time.

A fourth important difference in the way material and supplies are accounted for on the railroads lies in the method by which railroads place their charges for material to be used on additions and betterment work. It appears that on from 11 to 15 per cent of the mileage of the country this material is charged out as soon as it is received while on the other roads the material is carried in stock until it is actually applied.

A fifth difference found in the practices of railroads lies in the variation by which manufactured material is handled in the reports. It is a fact that on some railroads where scrap material is rerolled into bar iron, the disbursement of the scrap is considered as one disbursement, the disbursement of the iron as a second disbursement, and the material manufactured from this rerolled iron considered as another disbursement, so that in this particular instance three disbursements are involved. Other roads allow only two records of disbursements where raw scrap materials are used in the manufacture of finished products. The evil of this practice lies in the fact that the road which allows the greatest number of disbursements will obviously show the best turnover of materials with the same amount of material at the outset.

A sixth important difference in the practices of supply departments today lies in the method of reporting material which is transferred between storehouses as distinguished from that material which is disbursed from storehouses for actual consumption. As to the proper method, there is room for debate but the chief trouble is that some railroads consider such transfers of materials between storehouses as disbursements while others exclude them entirely. It is obvious that where the transfers between stores are large their inclusion in the disbursements of stock has the effect of giving a road a more favorable turnover than the road excluding them would have.

A seventh instance of lack of uniformity in supply practices is the inclusion in the material and supply balance of uncleared labor and miscellaneous charges which are not in any way related to material. It appears that on from 12 to 15 per cent of the mileage of the country this practice is followed although these miscellaneous charges are not in any way related to material.

An eighth difference in practice lies in the fact that some railroads include the scrap collected in the material balance and also report it as disbursements when it is sold, while on other roads this practice is not followed.

Finally, it should be recognized that varying methods are followed for handling so-called consignment materials which comprise those materials which are supplied to railroads in large quantities but are bought on terms whereby they remain in the possession and ownership of the supply company until the material is used. Cast-iron wheels, locomotive tires, arch brick and journal bearings are typical of supplies which are carried in this manner on some railroads. With reference to this material the variation in the methods lies in the fact that some railroads do not include any charges for these items in their material and supply accounts until a bill is rendered by the manufacturer, where others include monthly estimates of the stock used. A study of two railroads operating in the same territory was recently made which developed that one company was handling its consignment stock in such a manner that at the end of the month it had a credit balance which reduced its total balance figures by several hundred thousand dollars, while the other company included each month an estimate of the charges made for the consignment used, and the month's supply on hand was effected accordingly.

These several differences are cited primarily as illustrations but bear out the fact that uniform accounting is the first essential step in the direction of comparing the investments in materials on different roads. Substantial improvements have been made in the past few years in the physical conditions, cost, balances, etc., and comparisons among roads are desirable. But comparisons on any basis without any uniform basic accounting is impossible.

It is advanced that to establish this uniformity is im-

practicable in view of the cost to the railroads for revising present systems, but it is my opinion that a change from present methods to a uniform system would not entail additional expense to individual roads.

A STORES OFFICER.

Pitting Deserves Attention

CHICAGO.

TO THE EDITOR:

Referring to the article entitled "Pitting a Myth or a Menace," appearing in *Railway Age* of February 20, the pitting and corrosion of boiler shells, flues and firebox sheets is, in my estimation, more of a menace than a myth to the railroads. Its action is insidious inasmuch as it will appear in localities in which its presence has not previously been encountered. Occasionally it appears in the form of small pits in the flues or a large area of the flue will be eaten away. Again the flue will corrode through just inside the front flue sheet. This usually occurs near the bottom of the boiler and on the under side of the flue. The latter can be overcome by increasing the circulation at the forward end of the boiler, more frequent boiler washing, or the application of long shims in the effected area.

Although it has been our experience that those shims will be eaten through and the flues attacked, if allowed to remain in service over two years.

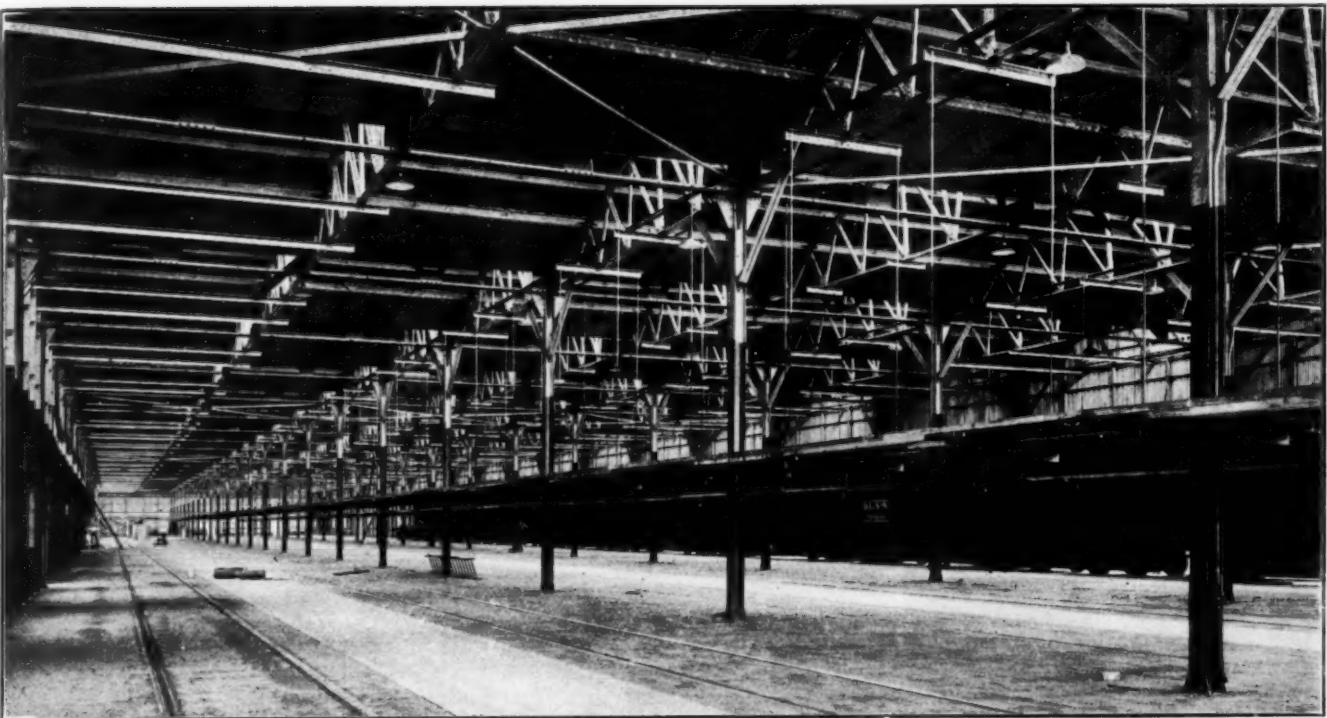
A great deal of pitting is encountered throughout the mining districts and occasionally from deep well waters. In some instances the pitting can be eliminated by treatment. Other waters will not respond so readily to treatment, making it necessary to resort to a new source of supply. It is also fact that pitting and corrosion are developing in treated water districts that were previously free from this trouble but notorious for the amount of incrusting solids contained. This pitting can be overcome by under-treatment, allowing a light coating of scale to accumulate, or by increasing the alkalinity which results in foaming and necessitates the use of anti-foaming compound.

In districts where the waters are heavily impregnated with incrusting solids it is necessary to reset the flues at shorter intervals and to vibrate the firebox sheets in order to remove the scale and prevent the sheets from becoming fire-cracked and mud burned. In the majority of instances the flues can be cleaned, new safe ends applied and the flues re-used until they become too thin or reach the scrapping limit of 1.65 lb. per foot for 2-in., 11-gage flues for locomotives carrying 200 lb. pressure, while the flues removed from locomotives operating in districts where pitting is prevalent are generally in such condition that it is imperative to scrap the entire set. The firebox will require renewal after about four years' service.

The greatest menace and expense caused by pitting or corrosion is that found in waters that contain chloride, sulphates or acids. Some waters not naturally acid become so at high temperatures, the pitting being more rapid and extensive in boilers carrying 200 lb. pressure than in those carrying 165 lb. pressure.

The elimination of pitting and corrosion will result in a tremendous saving to the railroads in increased life of flues, firebox and boiler sheets, whether it is accomplished by treating the waters, by the application of better material or by the installation of alloy steel tubes and plates, several installations of which are on test at present in territories where pitting is prevalent.

J. F. RAPS,
General Boiler Inspector, Illinois Central.



An Interior View, Showing the Lighting Secured

Lackawanna Builds Modern Structure for Light Car Repairs

Facilities at Buffalo enable work to be conducted under cover—Permanent construction adopted

By G. J. Ray

Chief Engineer, Delaware, Lackawanna & Western, Hoboken, New Jersey

IN order to handle light repairs on freight cars more efficiently and to afford better working conditions for employees, the Delaware, Lackawanna & Western has just completed a modern car repair shed at its East Buffalo freight terminal. An office and tool storage building was also built in connection with the car repair shed. The terminal in question is located immediately east of the easterly city limits of Buffalo, N. Y.

At East Buffalo, the road has a modern and well equipped mill building and car repair shop, where the heavier freight car repairs are made, but until now the light freight car repairs have been made in an open yard. The usual system of dolly tracks was used to convey the heavy repair parts to points where needed. Weather conditions, especially during the winter months, made the old system of handling the light car repairs very expensive, for men cannot do efficient work when exposed to severe weather conditions.

The new shed covers the entire old repair yard. It is 690 ft. long and 105 ft. wide, covering six tracks throughout its length. The building is constructed of structural steel frame and supported on concrete piers and a 12-in. concrete wall extending around the entire structure. The

sides are covered with corrugated copper-bearing steel sheeting. The roof is of saw-tooth construction with skylights five feet high extending the full width of the building.

The portions of the roof forming the gutters extend about three feet up the steeper side of the saw-tooth to the under side of the skylights and about ten feet up the opposite slope of the roof. These gutters are constructed of gypsum slabs poured in place with a sheet rock under surface. The waterproofing is four-ply saturated roofing felt laid in hot pitch and covered with a cap sheet of two-ply rubberoid. The remainder of the roof is constructed of pre-cast, reinforced, waterproofed cement tile applied directly to the steel purlins.

The saw-tooth windows have steel frames and corrugated wire glass, constructed with one section about 50 ft. long, hinged for ventilating purposes. The side lighting is furnished by a steel sash window placed in each bay along the sides of the building, each window so constructed that one section can be opened. These saw-tooth skylight and side windows afford very complete lighting and ventilation, both of which are essential for efficient work in the shed. The building is also fully

equipped with electric lights, consisting of 200 watt type C bulbs with 14-in. steel reflectors, while electric outlets are placed near the floor for extension lights.

Two lines of hanging scaffolds extend the total length of the building, located in the line of columns between the tracks. These scaffolds are supported from the bottom

second floor is used for office space for the general foreman and his force of clerks and piece work checkers.

The buildings were constructed under contract by A. W. Bowie, Binghamton, N. Y., in 150 working days. Plans and specifications were prepared under the direction of the writer, by F. J. Nies, architect. The construction



An Exterior View of the Car Repair Shed, Showing the Roof Construction

cords of the roof trusses and are about six feet wide and eight feet above the floor.

All of the material and equipment will be moved by electric trucks, thus doing away with the dolly tracks in connection with car repair work. For this purpose, three concrete runways, 7½ ft. wide, are constructed the entire length of the building in the spaces between the tracks where there are no building columns. A concrete runway ten feet wide is also built across the east end of the building, and on the outside of the east end of the building, a runway 17 ft. wide extends north and across to the end of the mill building. This system of concrete runways connects all points where material is stored or milled with any part of the repair shed. The remainder of the floor in the shed, including the space occupied by tracks, is of mastic construction. Thus, it is possible to run trucks over any portion of the floor.

All switching of cars is done from the west end of the building where large steel doors are placed at each track. The east end of the building is closed except for small sliding doors at the end of each concrete runway.

The building is completely equipped with Oxfeld acetylene service and compressed air. The pipe lines are supported in the lower chord of the roof trusses with the Oxfeld stations and compressed air outlets near the base of the building columns.

The new office and tool storage building is located on the north side, near the east end of the car repair shed. This building is in the form of a lean-to on the side of the car shed. It is a two-story building with a structural steel frame and brick walls. The roof is constructed of poured-in-place gypsum with a sheet rock under surface and is covered with four-ply felt with a slag surface. The first floor of the building is constructed of concrete, level with the floor in the car shed. This floor space is used for tool storage, a record room for the storage of car records, and a men's toilet for shop employees. The

was under the supervision of F. L. Wheaton, division engineer. F. B. White, assistant engineer, was in actual charge in the field.

Voting Power Again Considered by I. C. C.

WASHINGTON, D. C.

ANOTHER discussion by members of Division 4 of the Interstate Commerce Commission of the voting rights of common and preferred stock is included in separate opinions by Chairman Eastman and Commissioner Woodlock in reports authorizing the issuance of securities by the Jacksonville & Havana and the Chicago, Springfield & St. Louis for the purpose of acquiring and rehabilitating parts of the old Chicago, Peoria & St. Louis, which the commission once authorized to be abandoned.

The Jacksonville & Havana was incorporated for the purpose of acquiring and operating the line from Havana, Ill., to Jacksonville, 41.8 miles and agreements were entered into providing for conveyance to it of the line from Havana to Jacksonville, including terminal facilities at the latter point, for \$350,680, payment to be made \$117,000 in cash and \$233,680 in bonds, the latter to be covered by \$254,000 of applicant's first and prior lien mortgage 20-year 6 per cent gold bonds, which are to be taken by the protective committee at 92.

The applicant represented that it would also need funds for the following purposes: Rehabilitation work, \$60,000; equipment, \$64,030; materials and supplies, \$5,720; working capital, \$50,000; and reserves for additional equipment and further rehabilitation work, \$18,600. Including the cash payment of \$117,000, the total cash requirements are \$315,350.

Amendment of the charter is contemplated so as to pro-

vide for the issue of \$25,000 of common stock, divided into 5,000 shares of the par value of \$5, and \$300,000 of 6 per cent noncumulative preferred stock, divided into 3,000 shares of the par value of \$100. The applicant proposes to make a prior-lien mortgage of its properties to the Equitable Trust Company of New York and Samuel Armstrong, authorizing the issue of \$300,000 of first and prior lien mortgage 20-year 6 per cent gold bonds. The report says in part:

All of the proposed common stock has been subscribed for at par by persons associated in bringing about the organization of the applicant. It appears that this stock is to be deposited under a voting-trust agreement which is to be terminable by action of a majority of the depositors. The purpose of the voting trust is to maintain control of the applicant in such form as to permit prompt action in the event opportunity is afforded for sale, lease, or other disposition of the line.

With a view to obtaining the good-will and support of patrons along the line, it is proposed to sell the preferred stock at par to persons located in the territory served by it. The applicant states that it has been unable to have the sale of this stock underwritten. It is estimated that the cost of securing subscriptions through employment of solicitors will amount to \$29,200, or approximately 10 per cent of the aggregate par value of the preferred stock. Other expenses connected with the disposition of this stock, such as interest on loans pending payment of stock subscriptions and clerk hire, are estimated at \$18,800. Reasonable expense in connection with obtaining the subscriptions appears to be a proper organization expense which may be included in the investment accounts of the applicant. Interest on loans obtained by the applicant in anticipation of payment of subscriptions and clerk hire should be paid from revenues of the applicant and are not proper to be capitalized. Our order herein will provide that from the proceeds of sale of the preferred stock, an amount not exceeding 10 per cent of its aggregate par value may be used to pay expenses in connection with the sale thereof.

No arrangements have been made for the sale of the \$46,000 of bonds which will remain after delivery of \$254,000 of bonds to the committee. It appears that the minimum price of 85 was reached as the result of consultation with bankers. On that basis the annual cost to the applicant would be approximately 7.45 per cent. Net proceeds from the sale of the stock and bonds as proposed by the applicant, after deducting the maximum amount permitted for selling expense, would aggregate \$334,100, which is \$18,750 more than the estimate of present capital requirements. Our order will require that the surplus funds be used solely for capital purposes. Information furnished thus far by the applicant is not sufficient to enable us to make a finding upon the alternate proposal to pledge the bonds.

We will require as a condition upon which the authority herein is granted that the acquisition of the properties shall be recorded in the applicant's accounts at money cost and that the applicant shall submit for our approval the related journal entries.

In view of the importance of continued operation of the line to be acquired by the applicant, we find that the issue of \$25,000 of common stock, \$300,000 of 6 per cent non-cumulative preferred stock, and \$300,000 of first and prior lien mortgage 20-year 6 per cent gold bonds by the applicant as aforesaid (a) is for lawful objects within its corporate purposes, and compatible with the public interest, which are necessary and appropriate for and consistent with the proper performance by it of service to the public as a common carrier, and which will not impair its ability to perform that service, and (b) is reasonably necessary and appropriate for such purposes.

Commissioner Woodlock Has Separate Opinion

Commissioner Woodlock, concurring, said in part:

In this case a very unusual distribution of voting power among stockholders is proposed. Preferred stockholders are given one vote for each share, \$100 par, while common stockholders are given one vote for each share, \$5 par. The effect is that for an equal investment of money the voting power of the common stockholder is twelve times that of the preferred stockholder. Not only is this true, but all the common stock is to be deposited in a voting trust, in order to enable "control" to be delivered promptly in event that opportunity should occur to sell or lease the property to another company. The common stock is to be subscribed by the organizers of the company who, presumably, will determine its management. The preferred stock is to be offered to patrons of the lines, thus giving to the company a semi-co-operative character or appearance.

Assuming for the sake of this discussion that in other respects the proposals of the applicant are acceptable, the question is whether we should sanction a distribution of voting power among shareholders such as is here proposed.

While, however, the law is silent on the subject, we are necessarily bound at all times by the generally accepted principles of equity and fair dealing, which are either inherent in relations of men, or which grow necessarily out of changed conditions. If, for example, there were a generally accepted principle that voting power in corporations should always be directly proportionate to the amount of the investment, we would be bound to give effect to such principle in dealing with the issuance of securities. I know of no such principle. None such has been laid down by the highest courts, and none such has been declared in federal legislation. We have not only instances of state legislation definitely contrary in effect and purpose, but we have also instances where courts have given their sanction to such legislation. Furthermore, we have the fact staring us in the face that almost 60 per cent of the investment in railroads is and always has been totally disfranchised. I know, therefore, of nothing in the law or in the general body of accepted principle which prevents us from permitting distribution of voting power of the kind proposed in this application, unusual as is such distribution.

Furthermore, when Congress, as it did in 1920, definitely elected to rely on private management, enterprise and capital for the country's railroad transportation, it elected to take all those things that necessarily go with it. Among those things are a free public market for securities, opportunities for speculation in securities for private profit, opportunity for individual initiative and ambition in connection with transportation, and the consequences of all those things. Centering railroad "control" in a small part of the investment may work for good and cheap transportation—as, for instance, in the case of the Great Northern under the late Mr. Hill—and control scattered among a large number of small investors may result—as it did in the case of the New Haven—in conditions quite the reverse. There is no clear presumption in either direction. The presumption is that unless the public interest definitely blocks the road, or the law forbids, management should, by and large, have its way. Whenever we encroach upon the domain of management, except for definite legal reasons, or for reasons solidly founded upon a clear principle affecting the public interest, we are in effect using the letter of the law to defeat its spirit. I think this is something in which we have to watch ourselves very closely, for it seems to be an almost irresistible tendency of regulators increasingly to assume to themselves powers of management. Therefore, I concur in this disposition of the instant case.

Commissioner Eastman Dissents

Chairman Eastman, dissenting, said in part:

It is said that hard cases make bad law. This, in my opinion, is an illustration. It is a case in which there is natural and proper sympathy for those who, apparently with the best of motives, are trying to save this little line of railroad from abandonment. But such sympathy ought not to lead us to approve features of the proposed financial structure of the applicant which are unsound in principle and might, if the precedent were followed in other cases under other auspices, become positively vicious. In one important respect this financial structure meets with my hearty approval. It is limited to the amount of the actual investment in the property. In certain other respects I believe it to be unsound, and not only unsound but unnecessary.

The result will be that the \$25,000 of common stock will strongly outvote the \$300,000 of preferred stock. The practical effect is much the same as if the preferred shares were deprived of voting power, a practice which we have condemned in other cases.

In the second place, it is proposed to style \$300,000 of the stock "preferred," although the preference is only over \$25,000 of common. Such a preference amounts to little or nothing and the position of the holders would be practically as strong if all the stock were made common.

The danger of such "preferred" stock is that those to whom it is offered may be misled by the designation, and gain the impression that they are buying a security of strong and favored position. The statement is made that "the preferred stock is being sold to those whose economic and social future depends upon the continued operation of the road" and that "they are not subscribing to the stock primarily as an investment." But if this be so, and I do not question the fact, they will as readily buy the stock if the ostensible "preference" is eliminated, and it is designated "common."

I find myself unable to favor either that part of the plan which places the control of the property in the hands of those owning stock which represents but an insignificant portion of the investment sacrifice, or that part which creates preferred stock as to which the preference is but shadow rather than substance. I see no good reason why all the stock now issued should not be common stock of a uniform par value of \$100 per share. If the road develops any earning power in the future, this would improve its position by allowing opportunity for future financing through issues of preferred stock, as well as through issues of bonds.

Everything that we do, of course, encroaches upon the domain of management; but I agree with Commissioner Woodlock that we ought not to encroach "except for definite legal reasons, or for reasons solidly founded upon a clear principle concerning the public interest." In this case it seems to me clear that concentration of control of railroad properties in a relatively insignificant investment is opposed to the public interest; and it also seems to me clear that the public interest requires that railroad securities should conform in their designations and apparent attributes to the actual facts. As for our authority over such matters, it may be well to observe that in addition to the provisions of law which Commissioner Woodlock cites in his concurring opinion, we are specifically empowered, in connection with an application for authority to issue securities, "to grant it with such modifications and upon such terms and conditions as the commission may deem necessary or appropriate in the premises."

The commission also authorized the Chicago, Springfield & St. Louis to issue \$25,000 of common stock, \$500,000 of 6 per cent noncumulative preferred stock and \$500,000 of first and prior lien mortgage 20-year 6 per cent gold bonds, in connection with the acquisition and rehabilitation of the line from Springfield, Ill., to Lock Haven, 78.78 miles. Similar conditions were also imposed and Commissioners Eastman and Woodlock referred to their separate opinions in the other case.

I. C. C. Power to Authorize Abandonment Sustained

WASHINGTON, D. C.

THE authority of the Interstate Commerce Commission under the transportation act to authorize the abandonment of a branch line wholly within a state was upheld by a decision of the Supreme Court of the United States on May 3. The decision affirmed that of the federal court for the district of Colorado from which the state of Colorado had appealed in an effort to set aside an order of the commission permitting the abandonment of a branch line of the Colorado & Southern. The opinion, by Justice Brandeis, includes a long discussion of the principles involved in such cases, saying in part:

The argument rests upon a misconception of the nature of the power exercised by the commission in authorizing abandonment under paragraphs 18-20. The certificate issues not primarily to protect the railroad, but to protect interstate commerce from undue burdens or discrimination. The commission by its order removes an obstruction which would otherwise prevent the railroad from performing its federal duty. Prejudice to interstate commerce may be effected in many ways. One way is by excessive expenditures from the common fund in the local interest, thereby lessening the ability of the carrier properly to serve interstate commerce. Expenditures in the local interest may be so large as to compel the carrier to raise reasonable interstate rates, or to abstain from making an appropriate reduction of such rates, or to curtail interstate service, or to forego facilities needed in interstate commerce. Likewise, excessive local expenditures may so weaken the financial condition of the carrier as to raise the cost of securing capital required for providing transportation facilities used in the service, and thus compel an increase of rates. Such depletion of the common resources in the local interest may conceivably be effected by continued operation of an intrastate branch in intrastate commerce at a large loss.

The sole objective of paragraph 18-20 is the regulation of interstate commerce. Control is exerted over intrastate commerce only because such control is a necessary incident of freeing interstate commerce from the unreasonable burdens, obstruction or unjust discrimination which is found to result from operating a branch at a large loss. Congress has power to authorize abandonment, because the state's power to regulate and promote intrastate commerce may not be exercised in such a way as to prejudice interstate commerce. The exertion of the federal power to prevent prejudice to interstate commerce so arising from the operation of a branch in intrastate commerce is similar to that exerted when a state establishes rates so low that intrastate traffic does not bear its fair share of the cost of the service; or when the state authorities seek to compel the erection of a union station so expensive as unduly to deplete the financial

resources of the carriers; or when one railroad seeks to construct an intrastate branch line, which will deplete its own financial resources or those of another interstate carrier.

The exercise of federal power in authorizing abandonment is not an invasion of a field reserved to the state. The obligation assumed by the corporation under its charter of providing intrastate service on every part of its line within the state is subordinate to the performance by it of its federal duty, also assumed, efficiently to render transportation services in interstate commerce. There is no contention here that the railroad by its charter agreed in terms to continue to operate this branch regardless of loss. But even explicit charter provisions must yield to the paramount power of Congress to regulate interstate commerce. Because the same instrumentality serves both, Congress has power to assume not only some control but paramount control insofar as interstate commerce is involved. It may determine to what extent and in what manner intrastate service must be subordinate in order that interstate service may be adequately rendered. The power to make the determination inheres in the United States as an incident of its power over interstate commerce. The making of this determination involves an exercise of judgment upon the facts of the particular case. The authority to find the facts and to exercise thereon the judgment whether abandonment is consistent with public convenience and necessity, Congress conferred upon the commission.

The state contends further that the order is void, so far as it relates to intrastate traffic, because essential findings were not made and, also, because essential findings made were not supported by evidence. The findings alleged to be essential and lacking are that by continued operation of the branch interstate or foreign commerce will be discriminated against, or that the company will be prevented from earning a fair return on the value of its properties as a whole, or that the entire intrastate business in Colorado will not earn such a return upon the property used in conducting that business.

Before examining the specific objections, the nature of the determination to be made by the commission upon an application for leave to abandon should be further considered. As every projected abandonment of any part of a railroad engaged in both interstate and intrastate commerce may conceivably involve a conflict between state and national interests, the consent of the commission must be obtained by the railroad in every case. To ensure due consideration of the local interests, Congress provided that a copy of every application must be promptly filed with the governor of the state directly affected, that notice of the application must be published in some local newspaper, and that the appropriate state authorities should have "the right to make before the commission such representations as they may deem just and proper for preserving the rights and interests of their people and the states, respectively, involved in such proceedings." In practice, representatives of state regulatory bodies sit, sometimes, with the representatives of the commission at hearings upon the application for a certificate. Occasionally, the commission leaves the preliminary enquiry to the state body. And always consideration is given by the Commission to the representations of the state authorities.

While the constitutional basis of authority to issue the certificate of abandonment is the power of Congress to regulate interstate commerce, the act does not make issuance of the certificate conditional upon a finding that continued operation will result in discrimination against interstate commerce.

The sole test prescribed is that abandonment be consistent with public necessity and convenience. In determining whether it is, the commission must have regard to the needs of both intrastate and interstate commerce. For it was a purpose of Transportation Act, 1920, to establish and maintain adequate service for both.

The benefit to one of the abandonment must be weighed against the inconvenience and loss to which the other will thereby be subjected. Conversely, the benefits to particular communities and commerce of continued operation must be weighed against the burden thereby imposed upon other commerce.

An examination of the extensive record and of the three opinions of the commission convinces us that no relevant fact was ignored, that there was ample evidence to support the facts found, and that the judgment of the commission was not improperly influenced by the offer to lease the line to the protestants at a nominal rental. The case at bar is unlike *Texas v. Eastern Texas R. R. Co.*, 258 U. S. 204. There, the railroad was permitted to be relieved only from continuing operations in interstate commerce. It was being operated independently and not as a branch of any railroad engaged in interstate commerce. Losses incurred in its operation would not be reflected in the accounts of any interstate carrier; and no interstate carrier would have had to make good deficits so incurred. Its continued operation could not burden or prejudice interstate commerce, for the commission in issuing its certificate had adjudged that public necessity and convenience did not demand the continuance of its interstate services.

AirBrakeMenConvene at New Orleans

*Retaining valve testing and freight train handling reports
presented at opening sessions*

AIR brake men from all parts of the country met at the Hotel Roosevelt, New Orleans, May 4 to 7, inclusive, for the thirty-third annual convention of the Air Brake Association. The meeting opened with the largest attendance on record and the exhibit, provided by 51 individual supply companies, was also the largest held in connection with this association. Between 700 and 800 members and guests registered and a large number were present at the opening sessions presided over by President R. C. Burns (Pennsylvania). Following the president's address, reports on retaining valve testing and freight train handling were presented and discussed.

President Burns' Address

Our papers and reports of committees this year cover a broad field which should prove of value to all concerned. While there have not been any marked changes or developments during the past year, certain improved features have been brought out which will be discussed and receive due consideration during the course of our meeting.

Like every other division of railroad transportation, the air brake must, of necessity, keep pace with the constantly increasing developments and improvements in the more efficient and safe handling of passengers and lading. This necessitates constant vigilance in the way of practical apparatus, installation and maintenance. Many rules and regulations are essential in order that equipment from one road may be thoroughly interchangeable as to functioning and performance on another. Without such regulations we could not expect to progress, and in order that our progress may continue, it is vitally important that air brake men fulfill their duty in seeing that regulations are carried out.

When we look broadly upon the accomplishments of railroads in this country, as compared with those abroad, in facilitating exchange of freight, we have just reason to feel proud of our work. A freight car loaded in Canada can be transported to any part of this great continent without any change in its equipment or transfer of its lading.

While a healthy rivalry and competition exists among properties under separate ownership, there is no selfish division between the officers and employees of one road and those of another when it comes to matters pertaining to the common good. This is an accomplishment in which we, as air brake men, have had a prominent part, and we are, therefore, justly entitled to a feeling of pride in our vocation and in the railroad air brake department which we represent.

The safety factor, though of essential importance, is but a part of our extensive field of endeavor. The brake equipment must be equal to the demands of traffic in every particular and still render the required service as to safety.

You are aware of the efforts being made by the American Railway Association to analyze the existing equipments and the art of controlling trains by means of air brakes in general, with a view toward formulating improvements wherever possible or desirable. This is in the common interests of all railroads of the country as a whole. We shall await with much interest the results

of these studies, and I bespeak for this association your whole-hearted co-operation and willingness to render any service that may be desired.

Brake Pipe Leakage

Your committee on Brake Pipe Leakage was appointed during the winter of 1924 by President G. H. Wood and a preliminary report was submitted at the Montreal meeting of that year.

A progress report was submitted at the next annual meeting of the association held at Los Angeles during May, 1925. At that time that committee realized that the limited number of cars tested, as well as the comparatively few locations where tests were conducted, made the data more or less unreliable for use as the basis for determining the general condition of brake pipe leakage on railroads. It was decided that the evidence on this point could be greatly strengthened by further tests at other locations. The committee was desirous of making a more complete study of the entire subject with a view to recommending action by this association in dealing with the brake pipe leakage problem.

The subject of brake pipe leakage is very broad and this committee has found that it is impossible to cover it so that all phases are fully investigated, discussed and analyzed. The committee has endeavored to compromise by treating the subject in such a general way that this association will be justified in accepting and acting on the committee's recommendations.

This report, therefore, can be regarded as a final report on this subject, unless it is the expressed wish that a further investigation should be conducted.

(Here followed an extensive description of standing and running tests and a brake pipe leakage testing device.—EDITOR.)

Brake System Leakage Test Limit

There can be no doubt that the combined running and standing test data show that an exceedingly wasteful leakage condition exists on the average train in service. In order to improve this condition it is essential that some standard of excellence should be established for maintenance. Your committee has made a study of a large number of tests with the object of setting such a leakage limit.

The considerations which determine what the limit should be are several, such as economy, bad effect on train-handling, and possibility of engine failure on account of an overloaded compressor. Economy dictates that the limit should be set at a very low point so as to eliminate all waste but this might be objectionable because in some cases it would mean a hardship. The average leakage rates which exist on long trains are such that the locomotive compressor is frequently overtaxed. If the leakage limit is set to fix the maximum leakage for any train at a point which will insure a good margin against overloading the compressor, a very large saving will result and the integrity of the brake as well as the quality of its service will be improved.

The leakage limit which your committee wishes to suggest and recommend is 36 cu. ft. of free air per min. This means that when a train will not charge to at least 65½

lb. when supplied from a pressure of 70 lb. through the $\frac{1}{4}$ in. orifice of the testing device, the train must be inspected and repaired until it will charge to $65\frac{1}{2}$ lb. or more.

Conclusions

1—That the data of brake system leakage presented in this and the previous report is fairly representative of the leakage condition as it exists in current freight train service.

2—That the average of the relation between brake pipe leakage and the leakage from the auxiliary reservoir volumes is nearly one to one and frequently the ratio is greatly exceeded.

3—That both the brake pipe and auxiliary reservoir leakages are decidedly detrimental to brake operation.

4—That the modern long freight train must have its average brake system leakage reduced if it is to be handled safely and efficiently.

5—That about 97 per cent of all compressed air furnished to operate train brakes is wasted in maintaining pressure against leaks.

6—That the present high cost of operating and maintaining air compressors on locomotives will be reduced proportionately to any reduction in the average brake system leakage.

7—That all trains should be tested for brake system leakage before leaving a terminal.

8—That a brake system leakage limit should be fixed to govern how much will be tolerated.

9—That the brake system leakage testing device described in this report is a suitable device for the convenient and accurate measurement of train leakage.

10—That better brake installation design will facilitate the maintenance of a lower average brake system leakage rate.

11—That the use of reinforced pipe fittings will be of great assistance in the reduction of leakage and maintenance expense.

Recommendations

1—That this association go on record as favoring a brake maintenance program which will reduce leakage.

2—That the members of this association should assist wherever possible in establishing the practice of testing trains for leakage while they are being prepared to leave the terminal.

3—That the brake system leakage testing device as described in this report or its equivalent be adopted as the means of testing train leakage.

4—That for the present, a leakage limit of 36 cu. ft. of free air per min. per train be established. This means that a train will be condemned for leakage if it does not charge to 65.5 lb. or higher when supplied from 70 lb. pressure through a $\frac{1}{4}$ -in. orifice.

5—That the American Railway Association be requested to consider the testing device and leakage limit here recommended as a basis for a freight brake maintenance rule.

6—That a study be made of brake installation designs with a view to improving the mounting of brake equipment devices, the clamping of pipes and the elimination of threaded joints wherever possible. It is suggested that this subject be considered for action by the committee on recommended practice.

7—That this report be accepted as final by this association and the committee be discharged.

[The report was signed by Chairman C. H. Weaver (N. Y. C.), W. W. White (M. C.), C. B. Miles (New York Air Brake Company), and R. E. Miller (Westinghouse Air Brake Company).]

Retaining Valve Testing

The retaining valve and its pipe have not received the attention necessary to keep them in proper condition for roads using them. A reasonable degree of perfection will not be reached until level grade roads realize that their responsibility is equal to that of the mountain grade road and until all brake cleaning points give the attention to this work as called for by A. R. A. instructions and rules. Excessive retained duty causes cracked and "brake burned" wheels, and for which the owning road is responsible.

"In Date" and cars for brake cleaning when on shop or repair tracks are to have, in addition to the other brake work, a test of retaining valve and piping and to come within specified limits for leakage.

Formerly this was a gage test, but in the 1925 rules prepared by the Bureau of Safety and a committee of the Mechanical Division of the A. R. A., the gage test is made optional, though preferable (the last paragraph of interchange rule No. 60 makes a portion of these rules part of it). The alternative is rule No. 165 and reads:

"If the retaining valve and its pipe are not tested with a gage, as prescribed in rule 164, it must be tested by applying the brake with a 20 lb. reduction from not less than 70-lb. brake pipe pressure and when the triple valve is released the retaining valve must hold the brake applied with force for 3 minutes at the end of which time the air must discharge at the retaining valve exhaust."

While the old rules making a gage test mandatory was rather burdensome, through the special and cumbersome apparatus required to connect and, where the gage connection was made at the retaining valve, through the awkward location to connect, yet without a gage test it cannot be known whether the pressure retained is approximately correct nor whether the blow-down rate is excessively in error.

To obtain the results sought with practically no difference in labor over the stipulated test with no gage it is recommended that each freight car be fitted with a $\frac{3}{8}$ -in. tee, located in the retaining valve pipe convenient for attaching a gage, not over 3 ft. from the triple valve, with the side opening pointed down and that the side opening be closed normally with a brass plug.

After the brake cylinder has been tested by connecting the gage directly to the triple valve exhaust port and then after the retaining valve pipe has been fully and properly connected this tee will permit of making the test of the retaining valve quickly and efficiently.

To this end we recommend that the A. R. A. rules be amended to require that such a tee be made the standard for all new freight cars and that a limited time, say two years, be set for equipping all old cars.

Referring to the changed rules for testing, as quoted earlier, it is believed that those who have given the retaining valve careful study and are really interested in obtaining good air brake service will regret that the gage test has been made optional.

However, so long as this remains, safety demands that the alternative test, No. 165, be amplified. As it stands, the test will pass a valve with the vent port entirely closed, certain to cause excessive holding power, with attendant likelihood of cracked, broken, flat and "brake burned" wheels.

Just what is meant by "the retaining valve must hold the brake applied with force for three minutes" might advantageously be defined. Some may consider this met if the brake cylinder piston has not returned to release position, yet a backward movement of 1 in. or $1\frac{1}{4}$ in. at the most will permit of easily moving the brake shoes on the wheels by a push on the end of a brake beam or prying

lightly against a beam hanger. Such shoe pressure can hardly be considered as being "with force."

The addition should stipulate that it shall be known that, when the triple valve is released, there is a sufficiently free discharge at the vent port and that this discharge shall have ended in the three minutes, following which the handle is to be turned down and a farther discharge must then occur at the exhaust port.

But, even with such an addition there will be no check against the valve holding too much, as from an excessively strong spring, due to improper repairs or stretching the standard spring.

When we consider the ease of using a gage with the proposed tee, and the advantages of the gage in determining exactly what the retaining valve will do in rates of blow-down, closing pressures and in indicating existing leakage; also, that, if desired, it can be used after turning down the retaining valve handle to determine whether there is any restriction in the pipe, it will surely be very appealing for a return to the gage test exclusively.

(This paper was contributed by the Northwestern Air Brake Club.)

Modern Freight Train Handling

Hard and fast rules for train handling cannot be properly applied to country wide conditions, or even in a general sense to individual trains; much depends on maintenance of equipment, much on the original design and much on the judgment used in the actual operation of trains. Where the original installation of equipment is correctly made, the maintenance up to the proper standard and the manipulation in competent hands, satisfactory operating results will be obtained.

Braking Trains up to 150 Cars, All Loads or All Empties, with Automatic Application, Practically Level Territory, Normal Traffic Conditions.—Your committee recommends that when making service stops, the throttle be gradually closed to between $\frac{1}{2}$ and $\frac{1}{4}$ of its working volume, and a brake pipe reduction of from 7 to 9 lb. be made as the initial reduction. As soon as the brakes have applied, which is indicated by the blow ceasing at the brake pipe exhaust, and the train slack has become adjusted, ease off to a drifting throttle.

Where the reduction made proves sufficient to complete the stop, a further reduction of from 7 to 9 lb. should be made when not over 40 ft. from the stop, in order to start the slack to run in at a time when it cannot run out again before the stop is completed. If this reduction is correctly made, the brake valve will be exhausting brake pipe air when the engine stops.

Should the initial reduction be insufficient to complete the stop, a further reduction of sufficient amount should be made. However, the final reduction as above outlined should be made when not over 40 ft. from the stop.

The throttle should be closed just before final reduction is made. When using sand in making stops, start its use before applying the brakes and continue until the stop is made.

The brake valve handle must never be moved to lap position and allowed to remain there just previous to making a service application, nor until after the initial brake pipe reduction has been made. This will avoid undesired quick action, and for the same reason, also avoid harsh slack action; reductions specified above should not be exceeded. Where excessive brake pipe leakage is present, make lighter reductions and use steam sufficient to keep train slack stretched during the entire stop.

When using the automatic brake to stop for water or coal, do not attempt a spot stop, but stop short and cut off the engine from the train. During the period the engine

is cut off from the train, take advantage of the excess pressure feature to accumulate maximum main reservoir pressure to aid in releasing and recharging the train brakes.

Braking Trains of 50 to 150 Cars Approximately Equally Divided as to Loads and Empties—Loads Ahead.

—We agree that if loads and empties could be alternated, ideal operating conditions would be approached. However, the necessary switching would create inexcusable train movement delay. Trains composed of loads ahead and empties behind can be satisfactorily operated under the above specified rules of braking, provided sufficient steam is used to keep the slack well stretched during brake action, and the locomotive brake is kept released.

Braking Trains of 50 to 150 Cars Approximately Equally Divided as to Loads and Empties—Empties Ahead.

—Your committee believes that harsh slack action in trains of such make-up is, under certain conditions, unavoidable, and recommends that the make-up of such trains be changed, switching from $\frac{2}{3}$ to $\frac{3}{4}$ of the empties behind the loads. The same braking rules as above specified, to be followed, particularly as to the extent of brake pipe reductions made, the working of sufficient steam to prevent slack action, and keeping the locomotive brakes released.

Train Stops With Locomotive Brakes.—When making a drifting stop, or a slow down, on level territory, where traffic conditions permit, in the absence of rules to the contrary, the stop or slow down may be made with the locomotive brake. Due care must be used to avoid severe train slack action, and also to avoid overheating tires. Under such conditions, water and coal stops may be made without detaching engine from train.

Releasing After Automatic Service Applications, Under the Above Stated Conditions.—Release must not be attempted when less than a total reduction of 15 lb. has been made. Assuming that the air compressor, the main reservoir, and the feed valve capacity are sufficient to supply the required volume of air to effect the release and that the brake pipe leakage is not excessive, objectionable overcharging of the head end will be avoided if during the release the brake valve handle is not left in release position longer than fifteen seconds. Use the "kick off" one or more times until the head brakes do not reapply.

When the brakes are applied on a train of fifty or more cars, moving at a speed of less than 15 miles an hour, they should be held on until the train is stopped. This does not apply to grade service when retaining valves are in use.

After the brakes have been released and the train started, avoid moving the brake valve handle from running position to release position, unless it is known that some brakes have reapplied. The unnecessary use of the "kick off" movement causes an overcharge and is thereby a prolific source of brakes creeping on, or reapplying and causing wheel damage.

Back-Up Movement.—When making a back-up movement with 30 cars or more, and it is desired to make a service stop, engineman will apply brakes lightly, using steam until a stop is made, keeping the engine brakes released. Where adverse grade conditions prevail to an extent where the running out of slack cannot be avoided and there is danger of the train breaking in two, the brake application should be made from the rear end of the train by a suitable back up hose arrangement, or a sufficient number of hand brakes should be applied on the cars farthest from the locomotive to prevent damage from harsh slack action.

Train Handling on Grades.—We assume that all railroads with heavy grades have their own rules, the result of years of experience, to govern the handling of trains.

Double Heading and Helper Service.—When double

heading, the engineman on the second engine should always allow the train to be started by the engineman of the leading engine if possible, before he begins to work steam. Starting both engines at the same time will cause a severe shock if slack is bunched.

With the helper engine at the rear of a train, its engineman should be the first to use steam in starting, using the same care as he would if starting the train with an engine on the head end. The head engineman should start promptly and carefully when the slack has been pushed in by the helper engine or when it is evident that the helper engine has stalled.

In the absence of special rules governing backing movements on a grade, with helper engine on rear end of train—such as backing in, or backing out of a siding—the helper engine should be considered the lead engine and should operate the brakes. A full understanding must be had before the helper engine assumes the control of train movement, and before the head engine relinquishes the control by cutting out the brake valve. During such movements, care should be exercised to prevent an overcharge of the brakes on the rear end of train.

When double-heading, or when using a helper on the rear end of a train, except in cases as specified above, while governing backing movements, the brake valve on the second, or helper engine, must be cut out from the brake pipe; this to give the lead engineman control of the brakes.

In no case will the second engine of a double header or a helper engine assist in charging the train during brake tests or during a train movement.

Air brakes must not be depended on to hold the train when a stop is made on a grade. Release the air brakes and hold the train with hand brakes. When ready to start, the hand brakes must not be released unless the air brakes are fully recharged.

Slacking.—When necessary to take slack in starting, endeavor to take either a foot or two, or the slack of the entire train. Apply the independent brake to hold the engine while reversing. On a grade where necessary to take the slack, sufficient hand brakes must be applied to prevent the rear end from running back and causing damage.

With a helper at the rear, the slack should be pushed forward until the helper is stalled and be held there. The lead engine will then bunch the slack from the head end against slack being held by the helper engine. Apply the independent brake on the lead engine while reversing it, then start the train carefully, on sand, to avoid slipping.

Thermal Brake Test.—The thermal or wheel temperature brake test is the most accurate method of determining brake efficiency. After descending a grade, the hotter the wheels the more braking was done, and any car that has cold wheels proves the inefficiency of the brakes on that car; as the braking force of a car is in proportion to its empty weight, the cars with the greatest empty weight in any particular train will have the highest wheel temperature where the brakes on all cars are in equally good condition.

The thermal test should be made where conditions favor, such as where stops are made to cool wheels, and cars with either cold or excessively hot wheels should be carded to indicate the brake condition.

General.—Your committee recommends for the avoidance of overheated wheels, stuck brakes and slid flat wheels, that a careful observance of the methods suggested herein for brake manipulation be strictly followed, particularly in the attempted release of brakes when they have been lightly applied. Under no conditions, after either a stop or a slow down has been made, should a release of brakes be attempted when a total

brake pipe reduction of less than 15 lb. has been made.

The so-called "graduating off" of freight train brakes is often responsible for wheel damage, due to the brakes with the best holding power remaining applied, which forces them to assume the entire duty of train retardation, because the brakes with the least holding power will have released. In many cases the "kicking off" of some brakes in the train will not produce harsh slack action and this objectionable practice has received sanction in some localities. The safety of the wheels should be one of the governing factors of train brake operation, and your committee for this reason condemns the practice of the so-called "graduating off" of freight train brakes.

Trains Parting

If a train parts while in motion, the engineman must shut off steam immediately and place the brake valve handle in lap position, releasing with the independent brake, if necessary, to prevent the wheels from sliding.

Under no circumstances must a locomotive be reversed while power brakes are applied. After an emergency application occurs, from any cause, do not attempt to release the brakes until the train has stopped. Brakes so applied on long trains are difficult to release, and care should be exercised in the manipulation of the brake valve during release, and the trainmen should note particularly that the brake on each car has released.

Inspection en Route

When leaving a terminal or stations where the engine has been cut off, or where switching has been done, enginemans should maintain a speed of not to exceed eight miles an hour for a full train length. An inspector or trainman should be stationed on the ground at the head end of train and remain there while the entire train passes him and he will not permit the train to proceed unless all brakes are released. This rule also should apply at all inspection points and at coal and water stops.

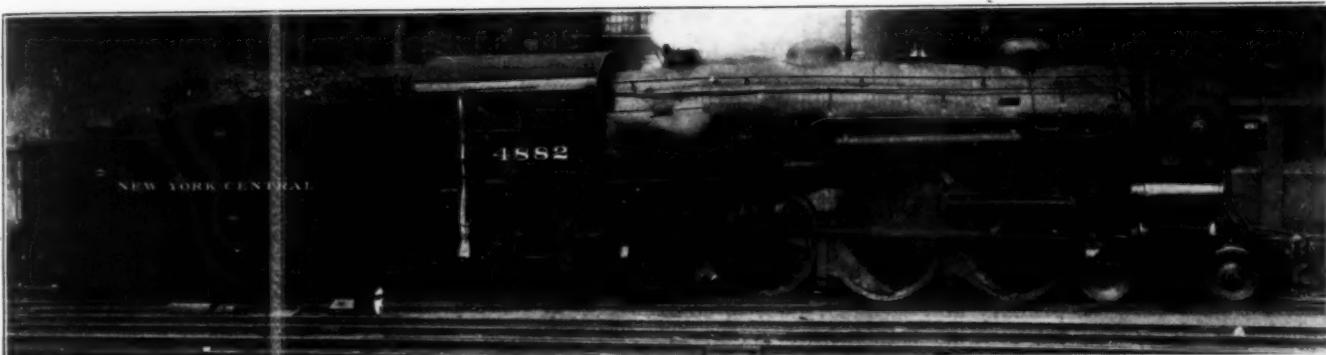
At terminals where yard testing plants are used to charge train brakes, frequent checking to insure that correct testing pressure is maintained should be made. If an overcharge of train brakes has occurred, owing to too high testing plant pressure, the brake must be applied with sufficient reduction to bring the overcharge down to normal, before the road engine is coupled to the train.

At the terminals not equipped with yard testing plants, where the brake test is made from the engine, due care should be exercised to avoid overcharging the brakes during release by leaving the brake valve handle too long in release position. When releasing brakes at terminals, or during train movement, overcharging will be avoided by observing the rules for releasing.

On arrival at terminals, to aid the inspectors in making the incoming brake test, enginemans should stretch the free slack out of train, and apply the brakes with a 25-lb. brake pipe reduction before the engine is cut off. Angle cocks should not be closed and air hose separated until engineman gives signal that brake pipe reduction is completed.

To avoid damage imposed by excessive strains due to pulling air hose apart, they should in all cases be uncoupled by hand. This rule should be carefully observed by trainmen at stations en route where the engine is uncoupled or switching is done. The failure to uncouple hose by hand is the most common cause for the increase of brake pipe leakage after departure from terminals.

[Paper contributed by the St. Louis Air Brake Club; committee, J. P. Stewart (M. P.), W. H. Davies (Wabash), F. B. Johnson (Westinghouse Air Brake Co.) and L. E. Giffen.]



Passenger Engine Equipped with Miller Inductive Train Stop in Chicago Station

N.Y.C. Installs Miller Train Stop

Intermittent inductive type uses inert track elements, mounted at rail level, with check of wayside circuit

THE New York Central has equipped 29 miles of track and 10 locomotives with the alternating current intermittent induction train stop of the Miller Train Control Corporation. Between Air Line Junction interlocking and the end of the New York Central northbound track at Alexis, Mich., a distance of 7.5 miles, and between Monroe, Mich., and Air Line Junction interlocking, a distance of 21.5 miles on the southbound track, a total of 34 inductors were installed at automatic and inter-

The track element is so mounted as not to extend above the level of the rail, and, therefore, it does not interfere with the operation of snow plows or spreaders, nor is it liable to be struck by open dump car doors or low parts of other equipment. The receiver operates with an air gap of 4 in., therefore it is mounted on the locomotive 7 in. from the gage line of the rail; and as the receiver is 10 in. wide this brings the entire locomotive apparatus within 17 in. of the gage of the rail at a height of 4 in.

Thus it may be seen that in this inductive system the track element may be placed away from the rail, so as to be out of the way, and the receiver can be mounted near the locomotive and placed high so as not to interfere with misplaced track material along the line. Such mountings, of course, bring the track element and the receiver off center 6 in., but this difference in alinement is no obstacle because the alternating current, magnetic balanced receiver, permits the 4 in. air gap.

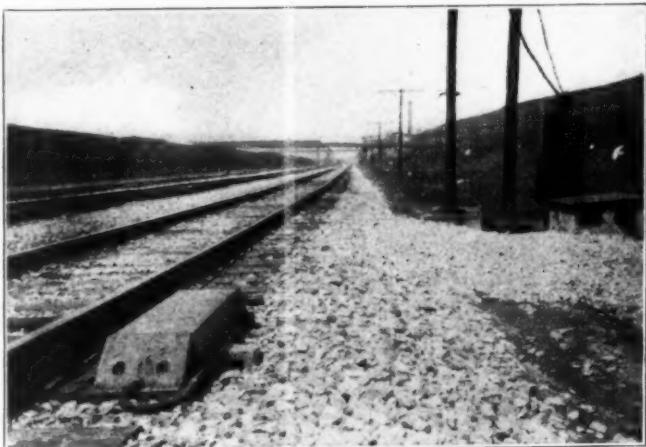
The simplicity of the system is shown by the fact that it employs only three major pieces of engine equipment, i.e., the receiver, the electro-pneumatic valve and the engineer's valve actuator. The electro-pneumatic valve is dissimilar to an ordinary relay in that the electromagnetic field is so strong as to operate and hold its armature against the valve which is under air pressure at 130 lb.

An outstanding characteristic claimed for the Miller inductive system of train stop is its immunity to interference or false stops from stray currents, third rails, turnouts, crossing frogs, bridge members, tools, or other metals that might be lying on the ties.

Description of Apparatus

The Miller Type-HB induction train control as installed on the New York Central is the intermittent alternating current inductive type with normally inert track elements. No battery or other local energy is required for the track elements; these are controlled by the signal control relays and, so far as possible, they repeat the indication of the signals. A closed self-checking circuit is used to give a clear indication.

An "H" shaped magnetic circuit with two parallel iron cores and two primary and two secondary windings is employed in the receiver on the engine. Heavy wrought iron brackets 1 in. by 5 in. support the receiver, being



The Inductor is Level with the Top of the Rail

locking signals. Portions of this equipment have been under test operation for several months and the complete installation was placed in full service on April 1, 1926.

The Miller intermittent inductive train stop system, as being used on this New York Central installation, incorporates several features of the Miller ramp system as used on a division of the Chicago & Eastern Illinois for 11 years, and as there approved by the Interstate Commerce Commission. For example, the apparatus for actuating the engineman's brake valve and the procedure of fore-stalling are the same as those on the C. & E. I. The pneumatic control feature of this actuator, which in the ramp system is controlled by the shoe, is, in the case of the inductive system, controlled by an electro-pneumatic valve.

attached to the rear end of the right frame of the locomotive. These brackets are so designed as to extend down to the receiver at different angles, thus tending to eliminate periodic vibration.

One of the laminated bars in the engine receiver contains a primary winding, the other a secondary winding. The combination turbo-generator supplies alternating current at 32 volts and 360 cycles to the primary coil, while the secondary coil is connected to the electro-pneumatic valve. The magnetic flux travels, normally, across the air gaps between primary and secondary cores, completing a "figure 8" path. This transformer action induces sufficient current in the secondary coils to hold the magnet valve in the proceed position.

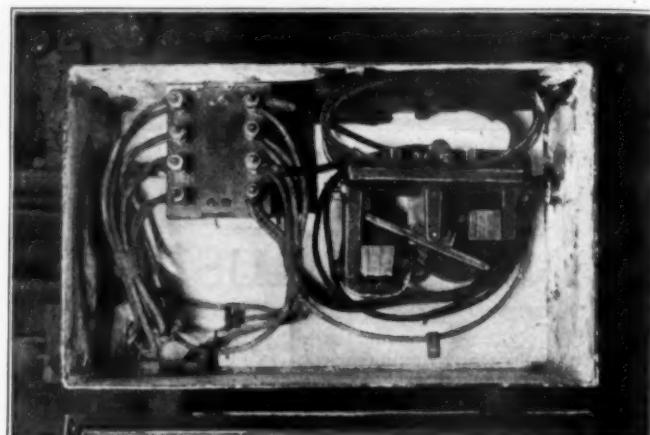
On passing over a "stop" track inductor, which consists of a pair of parallel laminated iron cores, the coils of which are open-circuited, there is a marked change in the flux distribution and the flux in the secondary core tends to reverse, due to the directional effect of the two track inductor cores. An actual reversal of secondary flux would reduce the valve current to zero momentarily and this would permit the electro-pneumatic valve to open. In practice there is no appreciable rise in current after passing through the zero value following this reversal of flux in the secondary core. The limiting height of engine receiver is that at which the valve current, while not approaching zero, is yet sufficiently low to cause the armature of the valve to open. Variations in air gap due to action of the locomotive springs will not interfere with the operation of the system.

Resonant circuits have been introduced by the inclusion of condensers in the engine primary and secondary circuits with a resultant improvement in power factor. It has

that no crosses, short circuits, or grounds on the engine circuits can tend toward false clear conditions.

Receiving a "Clear"

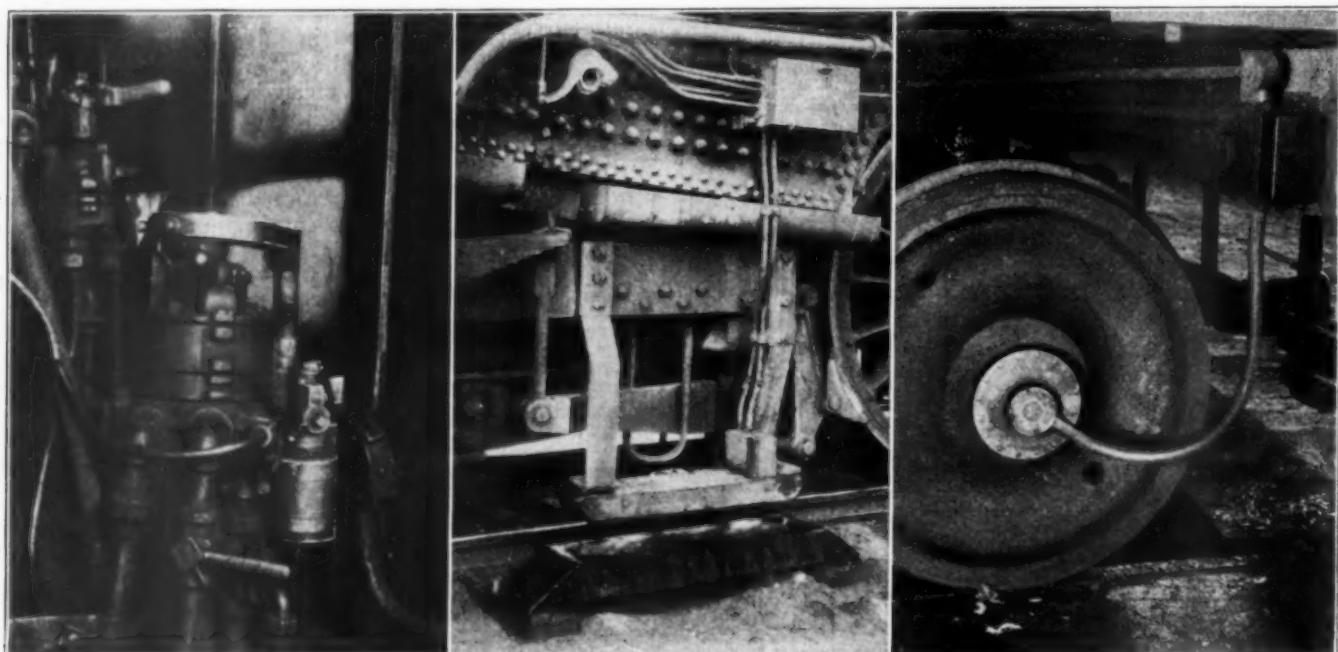
Embedded in the wayside track inductor are six coils which are controlled by the signal control relay and "reflecting" condensers. When a clear condition exists these



Electro-pneumatic Valve with Terminal Board

coils in the inductor are connected to the condensers and upon the approach of an engine receiver the energy is "reflected" back to the receiver with little change in flux distribution. This action maintains the valve current as the receiver passes over the inductor.

Energy for the train control is obtained from a Pyle-



Actuator on
Engineman's Valve

Side View of Inductor, Receiver
and Electro-pneumatic Valve

Fluid Governor Mounted on End of
Front Axle

been found that a resonant condition assists in the reduction of valve current toward zero value at stop inductors and further prevents any appreciable rise of valve current beyond zero if an inductor causes a relative reversal of flux in the secondary core. Any magnetic or electrical derangement of the receiver or other part of the engine equipment will detune the normally resonant circuits. As a further precaution the conduit system is so arranged

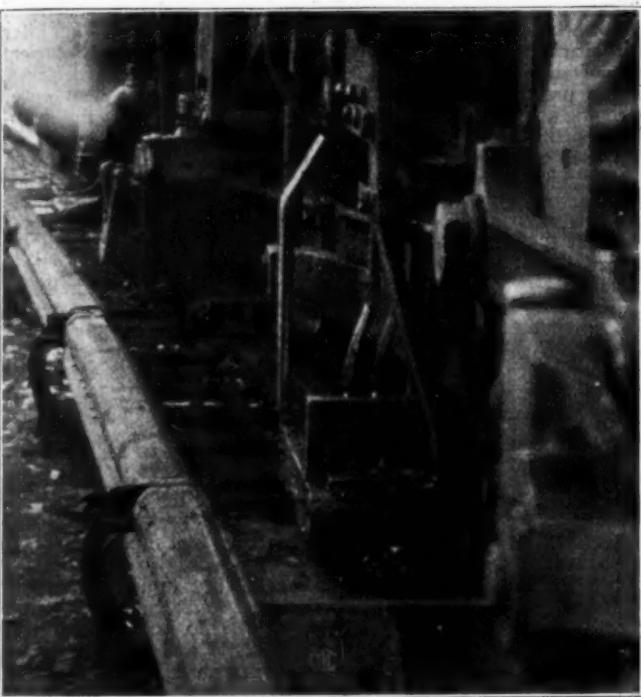
National Type E-3-M turbo-generator which is rated at 800 watts, direct current, for the headlights and cab lights, and 300 watts alternating current at 32 volts and 360 cycles for train control. The actual requirement of the train control system is about 90 volt-amperes.

In the Type-HB induction train control the same arrangement is employed for operating the handle of the regular Westinghouse or New York engineman's air

brake valve on the locomotive as is used on other Miller train control installations. The brake valve actuator is governed by the Miller electro-pneumatic valve, the armature of which is held in the closed (proceed) position by the valve current flowing in the windings. This armature, working through a valve spring, keeps the valve raised against the valve seat, preventing any discharge of air until a stop inductor is reached which will reduce the valve current and release the armature. A spring suspension is used for the entire valve assembly, periodic oscillations being damped out effectively by leather strips fitted into the springs.

Forestalling and Resetting

In order to forestall an automatic brake application at a stop inductor, the engineman presses the forestalling button. This connects the alternating current supply of



View Showing Off-set of Receiver and Inductor and Clearance from Third Rail in Detroit Terminals

the turbo-generator to the electro-pneumatic valve, thus retaining the latter in the proceed position regardless of the change in magnetic flux distribution caused by the stop inductor.

Once the valve armature is opened it cannot be restored to the closed position by either the secondary circuit of the receiver or the forestalling circuit. After an automatic application is initiated the train must stop, after which a reset may be accomplished. The reset button being located in the cab the engineman is not required to get out on the ground to reset. The Miller fluid governor is adapted as a positive motion detecting device to insure that the train has stopped before the cab reset can be operated. The governor is mounted at the right hand end of the front axle and is so designed that failure will give a more restrictive control.

THE OIL-ELECTRIC locomotive recently purchased by the Chicago & North Western from the American Locomotive Company, the Ingersoll-Rand Company and the General Electric Company, which is the first of its kind to be operated in the west, was exhibited by the North Western at its passenger terminal at Chicago on May 3.

W. G. Bierd Urges Labor Bill Be Reconsidered

W. G. BIERD, one of the receivers of the Chicago & Alton, stating that he speaks for the railroads opposing the Watson-Parker Bill, has addressed a letter to Senator James E. Watson, chairman of the Senate committee on interstate commerce, urging that the committee recall its report favoring the passage of the Watson-Parker railroad labor bill and reopen hearings to allow all interested persons to express their views concerning it.

Mr. Bierd denies that the committee of railway executives which appeared before the senate committee favoring the bill were authorized to speak officially for the Association of Railway Executives. He also denies that the pressure being brought to bear in connection with pending wage questions makes early action upon the bill necessary. He says that the demand for increased wages is not being pressed upon the managements of the railroads to any great extent, and that on the contrary the train service employees, who are the only ones who have presented such demands recently, have not gone actively ahead to try to secure favorable action upon them.

Mr. Bierd also contends that there is no justification for any suggestion that if Congress does not pass the bill, there will be no safeguarding of the commerce of the country; in other words, that there may be a strike. He holds that the present Transportation Act has provided and still provides the most definite means of dealing with disputes of railway managements and employees, a means much more effective than provisions for mediation and arbitration of such disputes, since there is no authority for the enforcement of the findings of mediators or arbitrators unless the two parties to the disputes choose to accept such findings.

Concerning the Labor Board, whose retention he favors, Mr. Bierd says: "The Labor Board has not broken down and the railroads as a whole have not declined and will not decline to abide by the rulings of the Labor Board. The great majority of the employees have not so declined, and those that declined in the past will now readily obey the orders of the Labor Board. Only one branch of railroad employees has in the past declined to deal with or obey the Labor Board, but experience of the past four years has been such that public sentiment has so crystallized back of and upholding the Labor Board and the Transportation Act, that it is our serious belief that today, if a serious question were pending and the transportation of this country were threatened, no road or group of roads and no labor organization or group of labor organizations would dare to refuse to obey the Labor Board's decisions."

Urging re-consideration of the bill by the Senate Committee, Mr. Bierd said: "We believe that the Senate and House were quite generally misled with the belief and understanding that this present measure, when presented, was a well-defined and well-understood agreement between all of the railroads and all of the employees, or generally so. Therefore, we believe, with this misunderstanding and lack of information on the subject, the lower House hastily passed a measure, honestly believing that it was good and wholesome and agreed to by all interested parties. The railroads as a whole knew almost nothing of this measure until a few days prior to the time we were asked to pass upon it, and it was then that this division occurred among the railroad officers. The public—and it is the public that is especially interested in this question—knew absolutely nothing of the measure or its proposal. However, as the nature of the proposed law

became known, and as men had time to consider it and to comprehend its full purport, this very decisive opposition has resulted. We believe that you desire all honest information obtainable. We believe that you do not desire and would not permit undue and hasty legislation on such an important subject. We feel that you have been seriously misled and that wrong information has reached you, and yet you had a perfect right to believe that this information was correct.

"It is thus clear, distinct and, in our minds, honest information that we are endeavoring to place before you, asking that you give full and serious consideration to this important question and see to it, as we believe you will desire to do, that this bill is not voted upon until time has been given for full consideration of it. May we suggest that you recall your committee's report and ask your committee to reopen hearings and allow all interested persons to come before you and express their views and give you their honest opinions from which your committee and the Senate may then consider this important measure."

A New Bill for Railroad Consolidation

WASHINGTON, D. C.

ALTHOUGH discussion of railroad consolidation legislation to amend and make more workable the consolidation provisions of the transportation act have for a long time been centered around bills introduced by Senator Cummins and considered in hearings before the Senate committee on interstate commerce, those interested in the subject have recently transferred some of their efforts to the House end of the Capitol. As a result a new consolidation bill, providing for a period of seven years for voluntary consolidations, mergers or unifications, subject to the approval of the Interstate Commerce Commission, has been introduced by Representative Parker of New York, chairman of the House committee on interstate and foreign commerce, and was discussed by him with President Coolidge on April 30. Later it was stated at the White House that the President would be gratified if such legislation were passed by the House and the Senate, although he had not considered the details of Mr. Parker's bill. The bill had been introduced on April 12 and given a number, H. R. 11212, but was immediately withdrawn for revision and was not printed and made available until May 1.

The Parker bill differs from the Cummins bill in that it does not provide for the promulgation of a consolidation plan by the commission but that upon the expiration of seven years from its passage it shall be the duty of the commission to report to Congress the extent to which unifications have taken place in accordance with it, and, "in the light of conditions then existing its recommendations as to further proceedings."

The Cummins bill would require the commission to promulgate a plan after five years unless sufficient progress had been made voluntarily by the carriers within such period. The Parker bill also omits the feature of the Cummins bill which would use the recapture of earnings as an incentive or as a pressure to force consolidations.

The chief provisions of the Parker bill which also includes much administrative detail, are as follows:

"SEC. 202. It is hereby declared to be the policy of Congress, in order that an adequate and efficient transportation service may be maintained in the United States and necessary weak and short lines be preserved, to authorize and encourage the unification, through any method specified in sections 203, 204, and 205 of this title, of the property of carriers into a number of strong and

efficient and well balanced systems which will, as far as practicable, maintain the existing routes and channels of trade and commerce, and preserve, as between themselves, the advantages of effective competition in service, so that the properties of the carriers in each system shall ultimately be managed and operated and owned or controlled by a single corporation, economy be promoted, unnecessary duplications and wasteful competition eliminated, better service afforded, and the traffic moved at the lowest rates compatible with the maintenance of adequate and efficient transportation service. In order that this policy may be carried out, the unification of the properties of carriers, directly or indirectly, otherwise than in accordance with the provisions of this title, after the enactment of the Railroad Consolidation Act of 1926, shall be unlawful.

"SEC. 203. (1) In Order to bring about such unification, two or more carriers shall have power to agree on a plan therefor to be carried out under the authority of this title.

"SEC. 204. (1) Two or more carriers may petition the commission for the approval of a plan to be carried out under the authority of this title if the boards of directors of such carriers have entered into a joint agreement, under their respective corporate seals, proposing such plan.

"SEC. 207. (1) If the commission finds that the provisions of this title have been complied with, and is of the opinion, after such hearing, that the public interest in adequate and efficient transportation service and the policy of Congress herein declared, will be promoted thereby, the commission shall enter an order approving the plan, on the terms and conditions and by the methods set forth in the petition, or with such modifications thereof, or upon such terms, conditions, and methods, as it may prescribe as necessary in the public interest. If the order of the commission (whether or not any intervenor's petition has been filed) imposes as a condition to the approval of the proposed unification that a carrier not joining in filing the petition be made a party to the unification, the carriers filing the petition may report to the commission the efforts made by them to comply with the condition; and if, after hearing, the commission is of opinion that the carrier that is to be made a party is insisting on unreasonable terms, the commission may revoke or modify the condition or prescribe the terms on which the carrier may be made a party to the proposed unification.

"(2) The carriers and the commission shall give due consideration to the inclusion in the plan of short and weak carriers in the territory involved; and in order that the policy declared in section 202 of this title may be carried out, the commission is directed to make and have available for its use, a study of the short and weak carriers.

"SEC. 215. (1) The provisions of section 20a, other than those of paragraph 10, shall not apply to any issuance of securities, or the assumption of any obligation or liability in respect of any securities, if in accordance with the terms and conditions of an order of the commission issued under this title, approving a plan.

"(2) The provisions of paragraphs 18, 19 and 20 of section 1 shall not apply to any extension, enlargement, or abandonment of properties, if in accordance with the terms and conditions of an order issued by the commission under this title, approving a plan, nor shall such paragraphs apply to any construction, acquisition, or operation of lines or transportation over such lines, in pursuance of the extension, enlargement, or abandonment.

"(3) Any of the evidence included in the record of the commission in its proceedings under paragraph 2, 4 or 5 of section 5 and any abstract or written materials made by the commission and based upon such evidence, shall be preserved and shall be available to and may be used by the commission in its proceedings upon a petition filed under this title; but any such evidence, abstract, or materials so used shall, by reference or otherwise, be made a part of its record in such proceedings.

"SEC. 217. Paragraphs 2, 4, 5 and 6 of section 5 of the Interstate Commerce Act are hereby repealed. The commission may, from time to time, for good cause shown make such orders, supplemental to any order made under paragraph 2 of section 5 prior to its repeal, as the commission may deem necessary or appropriate. Any action taken, under paragraph 2 of section 5, prior to its repeal, whether taken by the commission or in pursuance of an order of the commission made prior to its repeal, shall, notwithstanding its repeal, have the same effect after the enactment of the Railway Consolidation Act of 1926 as though such Act had not been passed."

THE WABASH on April 14 placed a car ferry in operation between Detroit, Mich., and Windsor, Ont. The ferry has a capacity of 30 cars. It is 370 ft. long and 65 ft. wide.

THE WOMEN'S TRAFFIC CLUB of Los Angeles (Cal.) held its regular meeting on April 28, and was addressed by Fred A. Hooper of the American Hawaiian Steamship Company.

Safety Section Meets at St. Louis

Annual meeting characterized by a large attendance and the consideration of many safety subjects

THE Safety Section of the American Railway Association held its sixth annual meeting at St. Louis, Mo., on April 27, 28 and 29, Robert Scott, (A. C. L.) chairman of the section, presiding. As reported in the *Railway Age* last week, page 1226, the opening session was addressed by E. A. Hadley, chief engineer of the Missouri Pacific. The Harriman gold medal was awarded to the Union Pacific and announcement was made of the officers who had been elected for the ensuing year, T. H. Carrow being chosen chairman.

In a discussion of safety kinks, it was stated that on the Union Pacific, women's safety auxiliaries have been organized and are producing results. On the Santa Fe, monthly safety rallies are attended by both men and women. On the Atlantic Coast Line, the name of each new employee is given to a safety committee and a member of that committee must see to proper instruction of the new man in safety and make a formal report.

Address by E. A. Hadley

Mr. Hadley, speaking for President L. W. Baldwin, who was unable to be present, discussed safety in industrial and home life, as well as on railroads. He said in part:

One matter of grave concern is the railroad grade crossing problem. The only immediate solution is in the education of the people. Grade crossings are being constructed at a much greater rate than we are able to eliminate them. California has the admirable plan of authorizing commissions to pass upon the question of the necessity for opening new crossings. Many states have passed laws requiring highway travelers to stop, look and listen, and where such laws are enforced there has been a noticeable decline in accidents. The Missouri Pacific, with the co-operation of press and pulpit, has organized Stop-Look-Listen clubs, and we have every reason to believe that this is productive of material results. The test of the railway safety officer is in his capacity to map out a definite course in accident prevention and the quality of leadership necessary to inspire the entire railroad organization, both officer and employee. The best textbook on railroad safety is the operating department's book of rules. The first thing you read in the A. R. A. Standard is this paragraph: "Safety is of the first importance in the discharge of duty." And next: "Obedience to the rules is essential to safety." In these two sentences we have outlined the working rule of the safety officer or safety committeeman. A working knowledge of these operating rules is essential to leadership in safety work. Every rule set forth in the A. R. A. Code is the result of some accident or near accident that occurred in our century of railroading and therefore was adopted in the interest of accident prevention. It seems to me that it is a matter of the utmost importance that the new employee be educated in the rules. A man who may not be influenced by a plea based on sentiment, or by logic spoken, written or pictured, can be directed in the proper channels of thought by concrete examples. You must be able not only to tell him what he must or must not do, but why.

Report of Committee on Statistics

T. H. Carrow, (Penn.) chairman of the committee on statistics, gave a summary of accidents in 1925 as given in I. C. C. reports [heretofore reported in *Railway Age*]. "Considering the nature and extent of train operations the reduction in casualties due to collisions is gratifying. But still further improvement can be made. And this improvement can be made without imposing upon the railroads the incubus of automatic train control. For one large railroad alone this would cost \$115,000,000 and a proportionate amount for all the railroads of the United States. Automatic train control is recommended only by those who apparently are unable to appreciate the eco-

nomic significance of the proposition. 'Had an adequate train control device been in use on this line this accident would not have occurred,' is the conclusion of many of the reports on collisions made by the Interstate Commerce Commission. But no mention is ever made of the fact that the installation of an automatic train control system on the railroads of this country would require a multitude of additional employees; these would be liable to accident and there would be more deaths and injuries incident to construction and maintenance, than would be saved by the use of automatic train control.

Following further analysis of the government statistics Mr. Carrow offered several resolutions recommending preventives. Physical conditions, including defective material and equipment, and litter or other physical hazards, and lack of safeguards comprise 5 per cent of the causes and the human factor 95 per cent. Of the latter, 10 per cent is attributable to the violation of rules and other forms of negligence, while 85 per cent is attributable to carelessness, thoughtlessness, indifference, ignorance or physical and mental unfitness, and misadventure. The preventives recommended for physical conditions were improved design and construction, better maintenance and the installation of necessary safeguards. Those for the human factor were improved training, supervision and discipline and safety organization, education, persuasion, co-operation and first aid and medical attention.

Publicity and Education

The committee on publicity and education, L. G. Bentley (C. & O.), chairman, reported that during the past nine months, 11 circulars have been issued covering 21 classes of causes of accidents and 23 educational bulletins have been issued in connection therewith. The total sales to 120 member railroads amounted to 440,287 copies.

Under a tentative agreement with the National Safety Council the council produces bulletins for the committee and under this agreement five bulletins were produced.

The National Safety Council on September 29, informed the committee that the council could no longer produce these bulletins, and the Safety Section resumed the production of its own bulletins.

Having carried out the prescribed course during the past year, the committee proposes to modify the program so as to cover detailed causes each month. The circulars should be made shorter and each issue should have a different appearance from its predecessor. It is desirable to use charts, if possible, to illustrate statistics. Particular emphasis should be placed on the importance of getting these circulars into the hands of foremen. The preparation of each installment should begin 90 days before it is to be used.

Prevention of Highway Crossing Accidents

The committee recommended that the film library be enlarged by the production during the coming year of at least three railroad motion pictures dealing with accidents and their prevention in (a) the mechanical and stores department, (b) the operating department, and (c) the construction and maintenance of way departments. These films should be strictly educational and of not more than

1,000 ft. each, for display in the shops and at other places.

The committee on the prevention of highway crossing accidents, H. A. Rowe (D. L. & W.), chairman, reported a slight numerical increase in the number of fatalities at railroad crossings, and an increase in the number of injuries, there being reported for 1925 2,206 deaths and 6,555 injuries; but the proportion to the total number of automobiles in use is less. Since 1921 the totals of persons killed and injured in highway grade crossing accidents, according to I. C. C. figures may be tabulated as follows:

Year	Killed	Injured	Automobiles Registered	No. of autos per death	No. of autos per injury
1921.....	1,705	4,868	10,464,005	6,137	2,150
1922.....	1,810	5,383	12,357,376	6,827	2,296
1923.....	2,268	6,314	15,092,177	6,654	2,390
1924.....	2,149	6,525	17,591,581	8,186	2,849
1925.....	2,206	6,555	19,843,936	8,995	3,027

The committee recommended that physical conditions on railroad property where highways approach and pass over the tracks be placed and kept in first class condition, that the motorists' view of approaching trains be improved as far as it lies within the power of the railroad; that visible signs warning motorists of their approach to crossings be maintained at the highest possible standard and that audible warnings, indicating the approach of trains be supervised with scrupulous care to insure their proper functioning; and that enginemen faithfully do their part in the sounding of whistles and bells. Enginemen can be made effective speakers at meetings; their experience is informative.

First Aid and Accident Prevention

W. A. Booth (Canadian National), described first aid work on his road. On each of the regions there is a regional first aid organizer whose duty it is to organize classes among the employees. Instructors for the classes are appointed from the ranks and must qualify by passing a three-year course in first aid. A class of about 20 is given a course of instruction for one hour a week for 14 to 16 weeks on the company's time and after passing an examination by a physician the pupil is given a first year certificate in first aid. The student is given the opportunity to continue his studies during subsequent years and further advanced awards are given upon the passing of tests. About 30,000 employees have received their certificates, a large portion of that number having received advanced awards. Interest has also been stimulated by a system of competitions. Teams of five men or women are formed and these are given test cases which consist of a supposed disability through accident or sudden illness. A silver trophy is given to the winner.

W. H. Cameron on the Outlook

W. H. Cameron, managing director of the National Safety Council, outlined the evolution of safety since 1907, referring specifically to changes in the attitude toward safety brought about through government activities, the workmen's compensation act, and federal bureaus. He said that only the minority of industries are consistently maintaining interest and exercising complete authority in safeguarding the lives of the workers in their plants; this because although collectively the accident bill runs into many hundreds of millions of dollars, the cost to the individual industrial company is relatively small, being less than 1 per cent of the total cost of doing business. As another reason for laxness he mentioned the instinctive unwillingness of the human mind to think of unpleasant things. In addition, there is a lack of leadership in the safety movement because, the economic stake in many individual industries being small, small men have been

given the responsibility. The only remedy is to bring about gradually a greater respect for the safety idea and the safety movement.

Safety, he said, will never have universal acceptance until its constructive and reasonable aspects have become known. The words "Safety First" have done serious injury, as the slogan is negative and destructive. The inner meaning of safety is the preservation of life to continue the adventure of life. If life is worth while it is worth continuing. The worker must first understand what safety is. It must be a desirable and sought-for attribute of living. The business executive sees that safety is allied with efficiency. In many instances the study of safe operation has revealed methods for increasing production.

Creating and Sustaining Interest

This subject was presented by F. W. Curtis (D. & R. G. W.). He classified the necessary methods under two headings, persuasion and compulsion. Under persuasion he placed inspiration, education, information, group rivalry, prizes, lessons from actual and near accidents, recognition of meritorious acts and the personal touch. Under compulsion he included rules and regulations, discipline, physical safeguards, safe maintenance and improved design or method. He would stress the ideals of brotherhood in human conduct, create pride of position and performance, make judicious use of stories as well as incidents in history, and tell of the accomplishments of great men; have talks by outside speakers. Education should be continuous and should deal with specific hazards. Meetings should be held regularly and conducted in a business-like manner but should be made as informal as possible. Committee inspection reports should be openly discussed.

Accidents in Maintenance of Way Work

J. D. White (Illinois Central), presented this subject. On the Illinois Central, he said, the basis for good safety work is the careful selection of men, the stabilization of employment as far as possible, education in safety practices, and constructive discipline. Roadmasters thoroughly understand that they are responsible for the safe operation of their departments. The accidents reported on each division are tabulated in the roadmaster's office and are charged up to the foremen and supervisors, who, at the end of each month are ranked according to their standing. This makes it simple to pick out the places where safety instruction is most needed.

Foremen are required to pass examinations on safety rules periodically, and to create interest a merit card has been adopted, which states that the foreman holding it has handled his gang six months without a reportable injury. In the discussion of the lineup of his work for the day, the foremen cautions his men to be careful throughout the day. Some foremen keep small blackboards in their tool houses upon which are written each morning safety slogans suggested by the men. In other places the men sign safety pledges each morning as they leave the tool houses. Some foremen name men each morning as "safety captains" to supervise the operations for the day.

Accidents in Maintenance of Equipment

J. E. Long (D. & H.), told of the practice on his road. A written report is required each month from every safety committee member. The blank for this purpose calls for a statement of conditions and practices which the member has corrected in the interval between the meetings. No names of persons are mentioned in these reports. The safety committeemen try to correct at least

one unsafe condition or one unsafe practice every working day. As a result, during 1925, the eight shop committees reported a total of 54,475 corrections; and 33,287 unsafe conditions and 20,565 unsafe practices were corrected by the members themselves; the balance were corrected by the chairmen.

At one large roundhouse and back shop, where the total of injuries showed a marked reduction, a further decrease was brought about by organizing a night safety committee, which holds regular monthly meetings at 10 p. m. During the year following the organization of this night committee, the shifts had seven clear months out of twelve and reduced their injuries from 80 to seven. For the past six months, they have not had a single reportable injury, with over half a million man hours worked. There are about 435 men involved in this record.

The injuries chargeable to each foreman are shown on foremen's accident bulletin boards according to daily records. The motive power and car department foremen have divisional staff meetings monthly.

At one roundhouse and back shop where the usual activities failed to produce the results expected, the master mechanic required every foreman, assistant foreman and gang leader to render a written report daily of his safety activity. These reports were examined by the master mechanic every morning and as a result, this roundhouse and back shop, with about 420 men, worked from February 15, 1925, to January 12, 1926, without a single reportable injury. The entire division, with about 450 M.P. men, worked eight months and two weeks, a total of 890,000 clear man hours.

Foremen's safety certificates are issued, for a six-months clear record. A clear record for a year entitles them to a certificate signed by the superintendent of motive power or master car builder and the superintendent of safety. Two-year and three-year no-accident certificates are signed by the vice-president and the president respectively, and by the superintendent of safety.

Frequent noonday safety rallies of employees are held and at some shops, these rallies are held each week.

At a large car shop it was found difficult to have men keep their tools in safe condition and an experienced shopman was selected to make an inspection of individual tool boxes every day. In making his daily rounds with a cart carrying an assortment of hand tools in good condition, he picked up every unsafe or battered tool and replaced it with a similar tool in good condition. It was also his duty, after picking up the unsafe tools, to have them repaired and placed in his tool cart ready for the next trip. This resulted in a marked increase in production, the men being able to do more and better work with safe tools.

Safety Among Transportation Employees

This subject was presented by E. M. Harris (N. Y. N. H. & H.). He recommended that leadership be developed in supervisory forces; a leader must be capable of understanding and teaching the moral value of rules and their enforcement. This leadership requires a mind that has been trained to interpret with some degree of precision the mental reaction of the different individuals dealt with. No greater mistake can be made than that of thinking one is a natural born leader, however good the evidence may seem, or that of having little further concern as to how additional authority thrust upon a man should be used. Competing forces and opposing objectives constantly tend to introduce into every field conditions or practices not compatible with substantial security. Good working habits and precision among transportation employees must be stimulated and nourished and careless

practices weeded out. The man whose safety is to be improved should be mentally and physically equipped for the kind of work he is to perform, interested in what he is doing and willing to help in what his company is trying to do for and with him.

Train and Train Service Accidents

C. L. LaFountaine (G. N.), discussed derailments and collisions. The two outstanding causes of derailments due to the defect in or failure of equipment are arch bars, bolts and cast iron wheels. The most prevalent causes of derailments due to improper maintenance of track are insufficient, excessive or uneven super-elevation and improper alignment and surface of track. Broken rails are second in importance and spreading of rails third. About 60 per cent of the total number of collisions is due to switching accidents.

Safety and the New Employee

This subject was presented by H. S. Corbin (A. C. L.). For new employees the early stages constitute a will-crisis or the change from an external to a self control. The employing officer must see to it that the right kind of example is set by older men in the service. Ordinary tests, such as examinations and fixed rules, are inadequate to the demand for a well trained mind. The compelling force is not to be found in prescribed rules. Safety must be education, an attitude of life. Through the standard book of rules, the new employee should be made to understand what is expected of him. The next stage should be in giving him the benefit of experience and a careful watch to see that he profits by it.

Accident Records Versus Accident Reports

D. G. Phillips (Wabash), discussed the definition of a "reportable accident." Often under the three-day rule, the degree of an injury in respect to the pain suffered, is not always shown correctly. However, no other rule would be so free from objections. The three-day rule gives a man no incentive not to report a slight scratch which might become an infection.

It is desirable that records on all roads be made under like limitations. Men on the different roads are not always losing a like amount of time with the same kind of injury. No man should be asked or be permitted to return to work if by so doing he adds to the bad consequences of his injury. The safety contest among the roads should be played according to the rules. If a man is not incapacitated he should work and the road's record preserved. The incapacitated should not be put to work.

Good records increase the interest of men in the safety movement. The return to work of slightly injured men who are not incapacitated improves a record and it is in the interest of the movement to get those not barred by the Interstate Commerce Commission back on the job. The object of the movement is to prevent injuries and not to establish records, but, if the interest in a record causes men to study accident prevention, then the idea of a record has served a useful purpose.

AT A MEETING of the Northwest Regional Advisory Board at St. Paul, Minn., on April 27, a committee was appointed to investigate the discontinuance of grain sampling stations at various points in Minnesota. Railroads which had maintained grain sampling stations at Willmar, Glenwood, Thief River Falls and Staples, have proposed to discontinue these stations. Many of the members of the board objected to this movement and as a result the committee was appointed to meet with the terminal grain committee before May 15 and work out a plan.

St. Paul Hearings Continue

HEARINGS in the investigation of the affairs of the Chicago, Milwaukee & St. Paul were resumed before Commissioner Cox in the assembly room of the Metropolitan Life Insurance Company, New York, on April 29. The first witness was Donald G. Geddes, member of the banking firm of Clark, Dodge & Co. who became a director of the St. Paul in 1909. Mr. Geddes was also a member of the special committee appointed to investigate the condition of the road in connection with the securities which matured in 1925 which committee, he said, had been unable to devise a plan.

Mr. Geddes expressed the view that the chief difficulty in the financial management was due to conditions at the eastern end of the line. "I am of the opinion," he said, "that the real difficulty was with the lines east of Mobridge, N. D., and not with the lines west. It seems to me that operating costs are considerably higher on the lines east than on the lines west, and that proportionately the rates are lower. The operating ratio west is more favorable than it is on the lines east of Mobridge. The eastern lines are getting short haul business and have expensive terminals."

Walter L. Fisher, special counsel for the commission attempted to make Mr. Geddes admit the financial structure of the road had been planned unwisely and with lack of reasonable foresight. The witness, however, refused to agree in this opinion. Mr. Fisher had particular reference to financing with short term bonds maturing in 1925, 1932 and 1934 instead of with bonds of later maturity. He also questioned the decision to issue bonds at a time when St. Paul stock was quoted at 150. Mr. Geddes said that he thought that market conditions were the governing factor. On the following day Mr. Geddes again testified. He was asked concerning the acquisition of the Chicago, Terre Haute & Southeastern.

"Didn't it strike you as peculiar," asked Mr. Fisher, "that the St. Paul had to guarantee par for bonds selling at 38 to 50, bonds of a railroad its owners had long been trying to sell?"

"I didn't know they had been trying to sell the Terre Haute," replied Mr. Geddes. "My impression was we had decided upon a lease because of certain requirements and legal features. My recollection is that the matter was put up to the board of directors at that price and no other price was mentioned."

Mr. Geddes testified on Saturday that the directors had agreed at a meeting ten days before the public announcement of the receivership that such a course would have to be adopted. He was asked whether Kuhn, Loeb & Co. and the National City Company had known about the receivership before March 17. Mr. Geddes insisted he had not informed the bankers of the receivership until formal action had been taken March 17.

Commissioner Cox asked: "Mr. Geddes, you said you were in almost daily communication with the bankers at that time; that it was a foregone conclusion in the minds of your special committee and the directors that a receivership was necessary after the meeting of March 10, 1925. Was there anything to prevent Jerome J. Hanauer of Kuhn, Loeb & Co., from reaching the same conclusion when you were in such constant communication with him?"

"He may have reached that conclusion," replied Mr. Geddes. "He had seen the preliminary report of Coverdale & Colpitts, submitted March 3, and he knew we were not optimistic."

Mr. Geddes was followed by George C. Mason who was vice-president and became a director in 1920.

On Tuesday, Jerome J. Hanauer, a member of the firm

of Kuhn, Loeb & Co., testified. He said that Kuhn, Loeb & Co. first began to deal with the St. Paul in 1880, but the business did not assume large proportions until about 1909. He said the firm had no contract with the St. Paul or with any other railroad in the United States to do its financing exclusively and the St. Paul was under no obligation to do business with Kuhn, Loeb & Co. unless the road found it profitable. He expressed the opinion that to establish the proper confidential relationship, railroads should issue their securities through one or two banking houses. In this way, he said, the bankers could determine more accurately when to issue securities. Because of the great number of investors which bankers represent, he thought that they should be allowed to serve on the boards of directors but he did not believe that the bankers would be the controlling influence on such boards in the matter of issuing securities.

Mr. Hanauer reviewed the various instances in which Kuhn, Loeb & Co. had assisted in St. Paul financing. An interesting part of his testimony was a comparison of the St. Paul and Baltimore & Ohio which also had large maturities to meet in 1925 but which, the road having become more prosperous, it was able to meet without difficulty. Mr. Hanauer's testimony on Wednesday was enlivened by controversy in the cross-examination of the witness by Daniel H. Grady, special counsel for the State of Wisconsin. Mr. Grady brought out by his questioning that Kuhn, Loeb & Co. had made a profit of \$1,813,000 in connection with conversion in 1915 of the European loans to a dollar basis. Kuhn, Loeb & Co., it was brought out, had to put up about \$25,000,000 for seven days, from January 24 to February 1, 1916. Mr. Grady sought to maintain that \$1,813,000 was an extremely high interest rate for the amount and period involved. Mr. Hanauer, however, said there was no reason for regarding Kuhn, Loeb's profit as interest. He said that "It was one of the finest transactions ever made for a railroad company." The large profit, he explained, was due to the risk run under war conditions in a fluctuating market and because no syndicate was formed by the originating bankers. The transaction originated, he said, in a request by French bankers who asked if Kuhn, Loeb & Co. would buy back St. Paul French bonds which had been sold in France. Mr. Hanauer said that by the transaction the St. Paul made a profit of \$1,813,000 plus a tax saving of over \$700,000.

Mr. Hanauer said that he had first become disturbed about the St. Paul situation when rates were reduced in 1922. His first knowledge of the impending receivership, he said, was on March 3, 1925, when he learned from C. C. Colpitts of Coverdale & Colpitts, engineers, commissioned to study and report on the condition of the railroad, that the report would be unfavorable. Previously, he said, he had been told by H. E. Byram, President of the railroad, that an unfavorable report would mean a receivership.

He emphasized a statement that no partners of the firm had had any dealings in St. Paul securities from this time "until long after the receivership went into effect. On February 10, 1925, he said that he had conferred with Edwin C. Jamieson, president of the Globe & Rutgers Fire Insurance Company. He remarked that he had been surprised at that company's large holdings of St. Paul stock. He said also that Mr. Jamieson had called a meeting on February 11, of representatives of the Metropolitan, Northwestern Mutual and Prudential Life insurance companies, large holders of St. Paul securities. Mr. Hanauer conferred with officers of these companies, but decided that it would be premature to form a protective committee at that time.

Physical Condition of Mexican Railways Improving*

Deterioration due to revolutions has been overcome and properties are now in good shape

By Raymond Chambers

Assistant Professor of Economics, University of Buffalo, Buffalo, N. Y.

THE American railroad man visiting Mexico today notices particularly the good condition of the roadway and bridges, and the excellent operation of trains, especially passenger trains. The *Railway Age* has called attention to these points in several articles since 1920, but improvement is constantly going on, especially in the roadway. In the writer's tour of several thousand miles during recent months he was constantly impressed



Exterior of the Aguascalientes Shops of the National Railways

by the first class condition of the trunk lines, for they are far better physically than at the close of the Diaz era. At that time the only really first class lines were the Mexican Railway and the Mexico-Laredo line of the National system. Today, besides these, a large part of the lines from Mexico to Torreon, Mexico to Guadalajara, and probably the San Luis-Tampico and Tampico-Monterrey lines of the National, as well as all of the main line of the Southern Pacific of Mexico, are first class, and in a sense far truer than in 1910, since standards for rails, bridges, and structures are higher now. These compare favorably with most lines in western United States and are ready for a large additional traffic.

The branches and narrow gage roads are not so well maintained, having less traffic, yet some, such as the narrow gage section of the National Railways from Mexico to Acambaro, via Toluca, are back where they were in the time of Diaz. Enormous sums had to be spent in rehabilitation, following the period of the revolutions. The Chihuahua and Torreon divisions of the National Railways, the Mexico Northwestern, and most of the Orient road, were completely destroyed during that period, as were the Yaqui River branch of the Southern Pacific, and the Balsas line of the National Railways, while the Tehuantepec, the Pan American, and the Vera Cruz & Isthmus had nearly died a natural death through deterioration, which comes rapidly in the damp, torrid lowlands which they traverse. Within two years after the Obregon administration had taken charge, all of the track destroyed during the previous decade had been replaced,

and today the entire mileage of the railways of the country is in operation, with a few unimportant exceptions.

The National Railways use 85 lb. rail nearly all the way on the Mexico-Laredo line and on part of the Tampico route, and 75 lb. rail on the line from the capital to Guadalajara, and to Durango and Juarez. Having thoroughly modernized the Laredo trunk line, the government is now building up the lines to Guadalajara and Juarez in the same way. But the Juarez line north of Aguascalientes, having a small traffic, still has light rail. Thus the Caritas Torreon section is equipped with 75-lb. steel, but from Torreon to Jimenez, with only 60 and 56 lb. rail. Throughout the National system, tie plates are used universally on curves. The narrow gage lines of the National naturally use a lighter rail, the Hidalgo division still using its original 40-lb. steel. Other less used lines employ 60 to 75-lb. rail, while even on standard gage divisions a large amount of 40 and 45-lb. rail remains. There were 643 miles of 40-lb. and 364 of 45-lb. steel in June, 1924.

The Carranza government laid some 85-lb. rail on the main line of the Mexican Railway, and this company now uses 85-lb. steel on the main line from Mexico City as far as Esperanza. From there east the rail alternates frequently between 82 and 85 lb., with 25 miles of 75-lb. rail from Paso del Macho eastward on the coast plain. The



National Railways Locomotives at Aguascalientes

branches have a variety of rail, mainly 62 lb. on standard gage lines, with the narrow gage branches using 62, 40 and 32-lb. steel. All the rail is of English manufacture except on most of the Maltrata hill section which was re-laid by the Carranza government with steel from Monterrey.

Tie Situation Bad

Ties laid by the National Railways on the plateau are generally pine; on the tropical lowlands, hardwoods. Practically all are of native timber. The Mexico-Queretaro

* This is the second of three articles on the railway situation in Mexico by Professor Chambers, the first of which appeared in the *Railway Age* of January 2, 1926, page 44, and the third of which will follow in an early issue.

and Hidalgo divisions use pine with some oak on the curves; the Torreon and Chihuahua divisions use pine and mesquite. On the principal lines of the plateau, ties last only a short time, owing to heavy traffic, 30,000 being changed monthly on one division alone, the Torreon, and some five million yearly on the whole system. There is 40 per cent replacement on some sections. On the Isthmus and the east coast, ties disintegrate rapidly on account of the heat and heavy rainfall, although traffic is very light. The tie situation is not good, railway demands taking a constantly greater number, while the area of the lumber districts of the country is fast shrinking. In 1922 the government established an export duty on ties, intended to be prohibitive. Two large tie-treating plants had been installed by the National two years before, at Aguascalientes and at Perote in Vera Cruz state, the former having a capacity of some 120,000 ties a month. Prior to 1922 few treated ties were used.

The Mexican Railway has been famous for using steel ties, being one of the first railways in the world to adopt them. Except for some 24 miles, the main line and Puebla branch use them. One-half of the Pachuca branch is also laid with steel ties, while the other branches use wood. On the upper division of the main line, wooden ties, when used, are creosoted, and all are hard wood. The lower division uses very hard balsam. The Huatusco, Pachuca, and Huajuapam branches employ hardwood while the Zacatlan branch uses pine.

Ballasting Spreads

The main lines of the National Railways are ballasted, a large part of them well. The Mexico-Laredo and Mexico-Aguascalientes routes are rock ballasted practically all



A Passing Track in the Mountains of Northern Mexico

the way. A thick bed of large crushed rock, red or white in color, makes an exceedingly comfortable roadbed and gives a very pleasing appearance. North of Aguascalientes ballasting has been going on for only two years, so there is little ballast except earth, but south of Torreon there is generally good rock ballast on curves, and north of that city occasional ash ballast. The Guadalajara line is already ballasted and various other divisions of the system are being ballasted now, in accordance with a general program which aims to have most of the system, except branches, completely ballasted within about three years more. Curves and mountainous sections of track are generally ballasted first, tangents and level sections

later. The materials used vary, sometimes crushed rock, elsewhere gravel, sand, earth, ash and tezontle.

The Mexican Railway uses tezontle, a red burnt earth, as its chief ballast. This is not as good as crushed rock because it is softer, but it keeps free from grass and is particularly efficient in wet weather because, being porous, the more rain, the firmer this ballast becomes. In some portions of the mountains crushed rock is used, and the Vera Cruz district uses gravel ballast known as terlinga. The ballast is about 8 in. deep, though in places it is much deeper. With wooden ties ballast comes to the top of the



Part of the Yard and Shops at Orizaba on the Mexican Railway

tie; with steel ties it covers the tie and comes up to the bottom of the head of the rail.

Good Bridges on Main Routes

On the main routes practically all of the bridges and culverts are of steel and masonry, except on the Torreon and Chihuahua divisions, which suffered most during the revolutions. On these the bridges are ordinarily temporary wooden structures. The main line bridges are generally well appearing, and the culverts, too, are generally new and well-constructed, of arched masonry, or concrete abutments supporting steel. The masonry work is creditable; Mexican masons have always had a reputation for fine work. On the lesser lines and branches, bridges are generally of wood, although occasionally, as on the Cuernavaca line the majority are of steel.

The Mexican Railway bridges, nearly all of which are of the steel plate girder type, came through the revolutions in fair condition, and since then have been well looked after. The principal bridge is the famous Metlac, a curved viaduct of nine spans with a length of 461 ft. Another is even longer, the Soledad, with 15 spans and a length of 698 ft. Bridges on the branch lines are sometimes steel, sometimes wood.

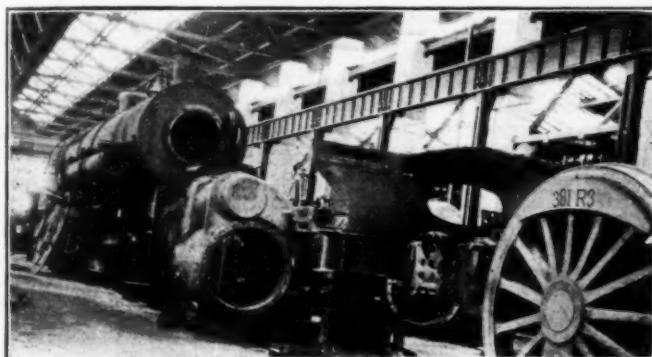
Structures Being Rebuilt

Structures suffered even more heavily than roadway during the revolutions, and in the storm areas all were generally destroyed. By 1922, however, half of the stations and section houses along the National Railways were reported rebuilt, but many temporary ones still remain. Most of those on the Chihuahua and Torreon divisions are converted box cars. Elsewhere on the trunk lines most of the destroyed stations have been replaced with substantial structures of stone, adobe, or adobe and brick, and generally present a trim and pleasing appearance. The water tanks, too, are often of stone.

Since 1920 the National Railways have added 79 miles of sidings and spur tracks (making 1,130 miles, or 295 miles more than in 1911); have enlarged the yards at Durango, Saltillo and Tampico; have built shops and rebuilt a roundhouse at Saltillo; and have erected good sized stations, with office buildings inside or adjoining, at

Tampico, Saltillo, Torreon, Guadalajara and Durango. That at Durango is said to be the finest in the country. The fact that nearly all of these betterments are in the north, indicates where the industrial centers of the nation are, excluding the capitol district. The cost of these new structures and yards, all now complete or nearly so, has been officially estimated at over three and one-third million pesos.*

The Mexican Railway's stations are of brick and stone and well built. All are new. Most of them were formerly



Interior of the Locomotive Shop at Aguascalientes

of wood, but were burned, sometimes twice, during the revolutions, and have been rebuilt since 1920.

Shop Facilities Poor

The shops of the National Railways have not seen much improvement since the Diaz period ended. The relative rank of the four largest is given as Aguascalientes, Mexico (the Nonoalco shops), Monterrey and Puebla. Besides the Nonoalco shops, the National Railways have three small shops in the capital, while there are 13 small ones elsewhere, a total of 20 on the entire system. It is the intention of the company to develop several of the shops, particularly at Aguascalientes, Nonoalco, San Luis Potosi, Saltillo, Puebla and Acambaro, and to use the rest as division shops.

Inspection of half a dozen of the shops last summer showed that they are in condition to handle ordinary work, although most of them are old, insufficiently equipped and forced to use very elementary methods through lack of funds. One at least of the smaller ones has a well-appearing new plant, but more of them are like that at Peralvillo (Mexico City) which was built in 1898. The Aguascalientes shops, though large and well supplied with machinery, much of it of recent and expensive type, need more modern buildings, equipment, and a better layout. The buildings are generally sheds with iron roofs and sides. When originally built, in the decade preceding the revolution, this shop was among the finest on the continent, but it has not developed relatively to those in the United States. Today it is inferior in quality to that of the Southern Pacific of Mexico at Empalme, though larger. All these plants, except that at Saltillo, were built in the days of smaller locomotives and cars, and need remodelling to meet modern conditions.

The Mexican Railway has shops at Orizaba, Apizaco and Cordoba, the first being much the largest and the one used in making heavy repairs. There is a roundhouse at Vera Cruz and an engine house at Mexico City.

Equipment Adequate but in Bad Order

At the beginning of the revolutionary era, in June, 1911, the National Railways had 761 locomotives, 570 passenger

cars and 20,389 freight cars. In 1921 the government rented considerable equipment from American lines and secured loans of \$7,500,000 in America, with which it purchased considerable equipment. Also, on the first of that year, the American Railway Association restored to the National Railways the interchange car privileges which had been suspended previously. As a result, in June, 1924, the system owned 729 locomotives (362 under repair), 575 passenger cars and 14,364 freight cars. In October, 1925, the equipment owned had increased to 1,010 locomotives, 572 passenger and 16,767 freight cars. However, the percentage of locomotives and cars under or awaiting repair is still very high, and considerable rolling stock is still rented from American companies.

Of the locomotives owned by the Mexican Railway at the end of 1924, 97 were of standard gage, and 10 of these were new electric locomotives. Passenger cars numbered 94, while there were 1,093 freight cars. The company's passenger equipment, both coaches and sleeping cars (it operates its own sleeping and dining car service), is today in good condition, and kept in thorough order. Freight cars, likewise well-maintained, have increased in number in every type except coal cars, and have increased in capacity as well, the older cars, as retired, being replaced by larger ones. Thus the number of standard gage box cars (excluding cars for pulque) increased 10.16 per cent between June, 1921, and December, 1924, while their total tonnage capacity increased 17 per cent. Since the number of revenue tons hauled in the latter half of 1924 was 5 per cent less than in the first half of 1921, owing to the De la Huerta revolution and its aftermath, the capacity of the railway is considerably above present requirements. The average load per freight car (average of all types) in the period from January to June, 1921, was 19.17 tons, and only 17.90 tons in the period from July to December, 1924.

Labor Situation Unique

Large wage advances had to be made to nearly all classes of employees in the first half of 1923, following



A Part of the Mexican Railway Shops at Orizaba

serious labor difficulties. This added heavily to the operating costs of the railways. President Calles' regulations, made in the spring of 1925, regarding wages and working rules on the National Railways were expected, if put into effect, to be extended to the Mexican Railway, as the latter is forced by competitive conditions to meet the National Railways scale in respect to numerous classes of labor. Chairman Yorke stated last June, however, that some classes of railroad employees received not too much but too little.

At the end of 1924 the cost of superintendence had increased over the second half of 1921 by about 25 per cent

* The Mexican peso is worth approximately 50 cents in American money.

for maintenance men, rates paid train service men had risen by 23 per cent and station service wages, 25 per cent. Engine and roundhouse men, switchmen, superintendents of transportation and general officers, however, were receiving the same as before, while clerks had received a nearly 14 per cent increase. These increases, though, are of total amounts paid the groups, not increases in the wages of individuals. Wage scales are roughly the same as on the National Railways, engineers and brakemen, perhaps the most conspicuous classes, receiving today respectively 1,500 pesos and 600 pesos a month, on the Mexican Railway, or 6 and 10 times what they were paid before the revolutions.

The National Railways had 42,786 employees during the year ending June 20, 1924, of which only 45 were foreigners. Wages averaged 4.45 pesos a day. The rates of pay scale down from an average of 64.66 pesos per day for general officers to 1.83 pesos for nearly 9,000 maintenance of way laborers. Total wages paid were 69,615,131 pesos.

In 1919-20 there were 33,672 employees (including the Pan American and the Vera Cruz and Isthmus, then listed separately), and total wages paid were 33,839,865 pesos. The average wage for the 31,575 men then on the National Railways, omitting the two minor roads, was 2.78 pesos. There were then 104 foreigners on the National Railways, and none on the other two lines. None of the foreigners on either date were general officers.

Thus in four recent years the number of employees has increased nearly one-third, while wages have more than doubled, due to pressure from the operating groups upon the government and company officers. Much dead wood in the number of ornamental general officers has been cut away, but the resultant reduction is a drop out of the sea of wage advances and new employees. Total railway earnings in the same four years have increased from 75,000,000 pesos to 105,000,000 pesos, or 40 per cent, so that wages have consumed the total increase and over six million pesos more. The total tonnage of freight handled (including company freight) in these respective years rose less than 50 per cent, reaching 6,348,359 tons in 1923-24. Today the skilled mechanic groups among the employees control the wage situation to their entire satisfaction, receiving the standard scale paid in the United States while doing less, although they are on the whole efficient labor. The lower grades of employees, however, are in a far less satisfactory position.



Independently Operated Mack Bus in New York-Boston Service

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended April 24 amounted to 973,304 cars, an increase of 12,118 cars as compared with the corresponding week of last year and of 94,917 cars as compared with 1924. There were increases as compared with last year in all districts except the Northwestern, in which the ore shipments were less than last year, and in all classes of commodities except livestock and ore, on which the lake movement began earlier last year. The largest increase was in coal.

The freight car surplus for the period April 15-22 averaged 286,203 cars, including 126,959 coal cars and 113,780 coal cars. The Canadian roads for the same week had a surplus of 22,784 cars, including 19,800 box cars.

The summary, as compiled by the Car Service Division of the American Railway Association, follows:

REVENUE FREIGHT CAR LOADING, WEEK ENDED SATURDAY, APRIL 24, 1926

Districts	1926	1925	1924
Eastern	237,535	226,767	208,347
Allegheny	204,206	197,219	179,164
Pocahontas	50,649	46,396	37,330
Southern	151,134	149,384	132,179
Northwestern	120,298	142,069	124,766
Central Western	135,139	125,995	134,349
Southwestern	74,343	73,356	62,252
Total Western Districts	329,780	341,420	321,367
Total all Roads	973,304	961,186	878,387
<hr/>			
Commodities			
Grain and grain products	38,410	34,123	37,845
Live stock	30,394	31,080	32,600
Coal	166,586	149,018	117,572
Coke	12,305	10,598	10,237
Forest products	77,496	77,280	77,120
Ore	15,079	42,495	27,417
Mdse. L. C. L.	264,204	255,732	247,887
Miscellaneous	368,830	360,860	327,709
April 24	973,304	961,186	878,387
April 17	964,935	923,844	876,916
April 10	929,506	918,400	880,937
April 3	928,092	923,400	861,990
March 27	967,838	932,769	907,389
Cumulative total, 17 weeks	15,781,435	15,509,239	15,086,241

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended April 24 totaled 56,021 cars, a decline from the previous week of 622 cars, the big decrease being in coal loading which showed a decrease of 857 cars. Compared with the same week last year, however, they showed an increase of 6,177 cars, all commodities, except lumber and ore showing advances.

Commodities	Total for Canada			Cumulative totals to date
	Apr. 24,	Apr. 17,	Apr. 25,	
Grain and grain products	6,258	6,605	5,775	106,983
Live stock	2,057	2,126	2,093	36,041
Coal	3,200	4,057	1,949	70,853
Coke	347	331	271	2,370
Lumber	3,635	3,463	3,938	52,785
Pulp wood	2,325	2,503	1,872	58,597
Pulp and paper	2,380	2,294	2,132	41,594
Other forest products	3,361	3,278	1,946	57,004
Ore	1,389	1,369	1,517	22,611
Merchandise, L. C. L.	17,374	17,035	16,356	244,198
Miscellaneous	13,695	13,582	11,995	184,268
Total cars loaded	56,021	56,643	49,844	826,047
Total cars received from connections	39,440	38,529	33,114	540,945

THE CINCINNATI RAILWAY CLUB will hold its next meeting on May 11, when a paper will be read on Relations of Public Utility Employees with the Public, by H. W. Derry, manager, industrial sales department, Union Gas & Electric Company, Cincinnati.

AN EXTENSION OF TIME until August 1 for the completion of the automatic train control installation required by the Interstate Commerce Commission on the Cincinnati, New Orleans & Texas Pacific (Southern) was granted by the commission on May 1, on petition of the railroad.

Edmund Pennington, Chairman of Soo Line, Dead

Expansion of road to system of 4,400 miles accomplished largely under his direction

EDMUND PENNINGTON, chairman of the board of directors of the Minneapolis, St. Paul & Sault Ste. Marie, died at his home in that city on May 1. Due to his advanced age, 77 years, he had not enjoyed good health for some time before his death. Mr. Pennington was chairman of the Soo Line for nearly four years, being elected to that position in May, 1922, when he requested that he be relieved of his active responsibilities as president.

Mr. Pennington was president of the Soo Line for 13 years. Previously he had been general manager and vice-president and general manager for 10 years. Altogether, 58 years of Mr. Pennington's life were spent in railway service, 42 of these being with the Soo Line or lines now included in it.

During his career as an executive and largely under his direction, the Minneapolis, St. Paul & Sault Ste. Marie expanded from a road of approximately 800 miles, as formed in July, 1888, by the consolidation of the Aberdeen, Bismarck & Northwestern, the Minneapolis & Pacific, the Minneapolis & St. Croix, and the Minneapolis, Sault Ste. Marie & Atlantic, to a system of some 4,400 miles. Due to its control by the Canadian Pacific, the development of the Soo Line was largely designed to supplement the facilities of the parent system. Thus one of the earliest lines built in the program of expansion was that from Hankinson, N. D., northwest to Portal, on the Canadian border, a distance of 350 miles, where connection was made with the Canadian Pacific, affording an alternate route south of Lake Superior for grain and other traffic moving from points in western Canada to Toronto and the east. A 260-mile extension was also built from Glenwood, Minn., to Noyes, forming a second connection with the Canadian Pacific and a short line between St. Paul and Winnipeg. Lines were built also from Brooten, Minn., to Duluth, and from Plummer, Minn., to Moose Lake to afford outlets for grain from central and northern North Dakota respectively, to the head of the lake at Duluth.

To compete for traffic in northern North Dakota, the Soo Line built a line from Thief River Falls, Minn., westward 300 miles to Kenmare, N. D. It also built an extension westward 136 miles from Kenmare, into eastern

Montana. While Mr. Pennington was vice-president, the Soo Line acquired an entrance into Chicago through the lease of the Wisconsin Central, a property of approximately 1,000 miles of line extending from Chicago to St. Paul and Minneapolis, with branches to Ashland, Wis., and Duluth, Minn. In August, 1921, the Wisconsin & Northern was acquired to provide a shorter route for traffic moving between the upper peninsula of Michigan and points south, including Chicago.

As a railway executive Mr. Pennington was conservative in some respects and aggressive in others. While deliberate in adopting some railway practices which had been readily adopted on other lines, he aggressively developed the local freight terminal facilities of the Soo Line at Chicago, which were said to be the most modern in that city when completed in 1913. One of his conspicuous traits was his desire to encourage initiative in his organization and to develop responsibility on the part of his officers.

Mr. Pennington was born on September 16, 1848, at LaSalle, Ill., and began his railway career in his twenty-first year as a warehouseman in the employ of the Chicago, Milwaukee & St. Paul. A year later he became a brakeman on that road. Two years

later he was promoted to conductor and in 1875 was promoted to roadmaster. He held this position until 1877 when he was promoted to superintendent of construction from which position he was promoted to general roadmaster in 1879. He was promoted to assistant superintendent on the Iowa and Dakota divisions in 1882, and in 1884, after 15 years of service with the St. Paul, he resigned to become a superintendent on the Minneapolis & Pacific. His connection with the Soo Line dated from the consolidation of the Minneapolis & Pacific with that road at the time of its reorganization in 1888. Mr. Pennington served as superintendent until April 15, 1898, and as general superintendent from that date to February 1, 1899. He was then promoted to general manager, holding that position until July, 1905, when he was promoted to vice-president and general manager. Mr. Pennington was elected president of the Soo Line in March, 1909. Later he was elected president also of the Wisconsin Central, the Central Terminal Company, the Duluth,



Edmund Pennington

South Shore & Atlantic, the Mineral Range and the Spokane International. His election as chairman of the board of directors occurred in May, 1922.

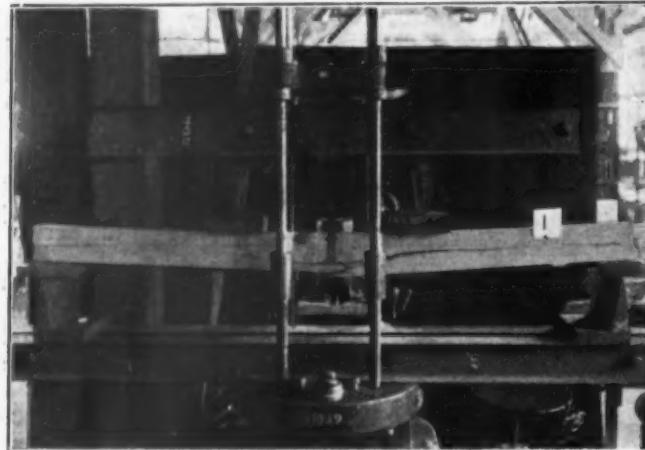
As indicating the continuity with which he applied himself to railway work, the statement was made, when he was elected chairman, that for 35 years, with the exception of a week's illness and periods in which he was on business trips, he had been at his office every day, including Sundays.

On Thursday, May 6, activities on the Minneapolis, St. Paul & Sault Ste. Marie were generally suspended at 2 p. m. for five minutes as a token of respect to the memory of Mr. Pennington, that being the hour of his burial.

Knots Affect Strength of Bracing for Carload Freight

By R. P. A. Johnson,
Engineer in Forest Products, U. S. Forest Products Laboratory,
Madison, Wis.

A PIECE of car bracing has no definite, fixed strength regardless of how it is used. Its strength and the service it is good for depend largely on how it is placed with reference to the knots it contains. In order to know how to place bracing with reference to knots, we must first see how a knot injures the strength of beams. If we test the wood of a knot, we find it harder, stronger, and heavier than the surrounding wood.



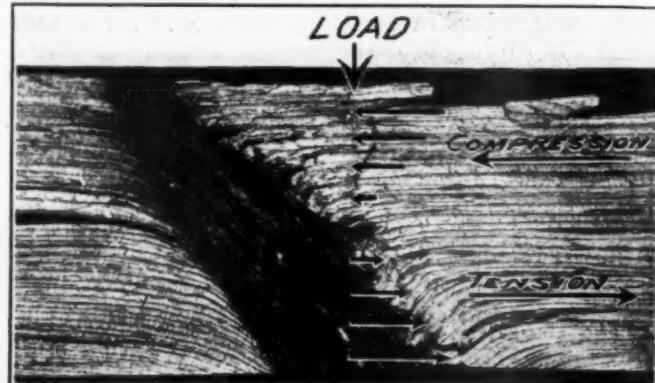
Machine Shows Correct Position for Loading Knotty 2 x 4

We might, therefore, expect it to be an asset to strength, yet we know that it is a liability. Why? The answer is not far to seek, because one of the most prominent characteristics of wood is its difference in strength lengthwise of the grain and across the grain.

In tension, wood is from 25 to 50 times as strong in the direction of the grain as across it, depending on whether it is green or dry. In compression, wood is about ten times as strong with the grain as across it. Let us see how this characteristic of wood explains the injurious effects of knots on the strength of a beam when used as a car brace or for any other purpose. A knot is formed by wood fibers of the main body of the tree running out into a limb, and the other fibers develop cross grain in passing around the knot. Consequently, forces acting along the grain of the main body of the beam act across the grain of the wood in and surrounding the knots.

Now, when a load comes against a brace, tending to throw it into a bow shape, the side of the brace away from

the load is stretched, or thrown into tension along the grain, while the side next to the load is shortened, or compressed along the grain. That is practically the whole story of the bending of a beam. Thus the lengthwise tension and compression of the brace act on the wood of a knot in its weakest direction, that is, across the grain. Even the strength which wood has across the grain is practically destroyed in knots by the checking which almost invariably accompanies drying. Consider a piece to be loaded at the top, and supported at two ends. The top of the beam will be shortened or compressed and the



Knots Injure the Strength of Beams. Cross Grain in and Around a Knot

bottom stretched or under tension. The forces are acting along the grain, or in the strong direction of the wood, in the main part of the beam, and almost directly across the grain, or in the weak direction of the wood, in and around the knot. We see, therefore, that the cross-grain in and surrounding a knot is what causes injury to the breaking strength of a beam, and since the difference in strength along and across the grain is so much greater in tension than in compression, knots on the tension side are about twice as injurious as they would be on the upper or compression side. Therefore, turn the knotty face of a car brace toward the load and not away from it.

"It sounds good, but it is all theory," you may say. Now, suppose we subject it to a practical test as was done before a group of claim agents of the American Railway Association at the Forest Products Laboratory. Three 2 in. by 4 in. sticks were cut from the same plank, one clear and two with knots of about the same size on the edges. One was tested with the knot on the compression face and one with the knot on the tension face, and the results compared with those of the clear specimen. Each piece was put into a testing machine, as shown in the picture, with its ends supported and the load applied on the upper face through the I-beam and pressure blocks shown. The beam with the knot on top, broke at a load of 1,670 lb. The beam with the knot at the bottom broke at 1,030 lb., while the clear beam broke at 2,430 lb. So the knot at the top or compression face caused the beam to break under 760 lb. less load than was carried by the clear beam, while the knot on the bottom or tension face caused the beam to break at 1,430 lb. less load than the clear beam carried. That is, the loss in strength from the knot on the bottom or tension face was approximately twice that from the knot on the top or compression face, as our theory stated would be the case.

The theory of the influence of knots on the breaking strength of beams is based on the results of many tests made at the Forest Products Laboratory, and the three special tests shown in the photographs were only to demonstrate the practical application of the principle.

Telephones Used on Long Freight Train

TESTS were recently conducted on the Pennsylvania between Ft. Wayne, Ind., and Crestline, Ohio, 132 miles, to determine the practicability of a system of communication between the head and rear ends of a long freight train. Ordinary wire telephones were employed, these being connected with No. 17 copper steel twisted pair wire stapled loosely over the tops of the cars between the engine and caboose. This temporary arrangement was used only for purposes of determining the desirability of providing communication facilities for the benefit of train crews. The tests demonstrated the usefulness of vocal communication for such purposes and indicated the desirability of developing radio or "wired wireless" as a practical means of gaining this end.

The problem of developing radio or wired wireless equipment for communicating between the head and rear ends of long trains has been discussed at meetings of the Telegraph and Telephone section, A. R. A., and a test of carrier telephone equipment was made last year on the electrified section of the Virginian, as reported in the *Railway Age* of September 26, 1925, page 553. These tests on the Pennsylvania, however, were conducted primarily to settle the question of the need of continuing further investigation of means of freight train communication on a steam railroad.

On February 11, extra 1685, a freight train of 73 cars, left Ft. Wayne, for Crestline at 10:10 a. m., equipped with the test telephone apparatus. Some of the advantages of telephone communication were:

(1) While pulling out of the yard at Ft. Wayne the conductor informed the engineman that a car repairman who was on the caboose would drop off and close the switch, thus permitting the engineman to handle his train without slowing up to permit a trainman to close the switch.

(2) The engineman called the conductor after passing Maples and made inquiry as to the movement of the train and whether everything was O. K., and being informed that everything was in good shape as far as the train was concerned he eliminated a stop for water at Monroeville.

(3) The engineman again called when passing signal location 3023, stating that he had received an approach signal indication of a train in the block ahead.

(4) When approaching Middlepoint, the engineman made inquiry as to whether he should stop west of town and cut off or pull the train down town and cut the road crossing. The conductor told him to leave his train west of town, which he did, and went through the siding to get coal and water. After the engine had returned to the train and the flag was called in, the conductor called the engineman and told him the flag had returned and that all concerned were on the caboose.

(5) The train was stopped on the curve at Lima, Ohio, just west of the passenger station because a switch engine was working there. It being impossible for the conductor to see the cause of the delay, the engineman called the conductor and informed him of the circumstances and added that as the switch engine would probably be there for only a few minutes he did not think it would be necessary to cut the street crossing. This made it unnecessary for the conductor to go over the train or to cut the street crossing.

(6) Extra 1685 took siding for No. 40 at Dola, and also took coal and water while waiting. While on the siding the conductor called the engineman and told him that the train was clear of the main track and the switch closed.

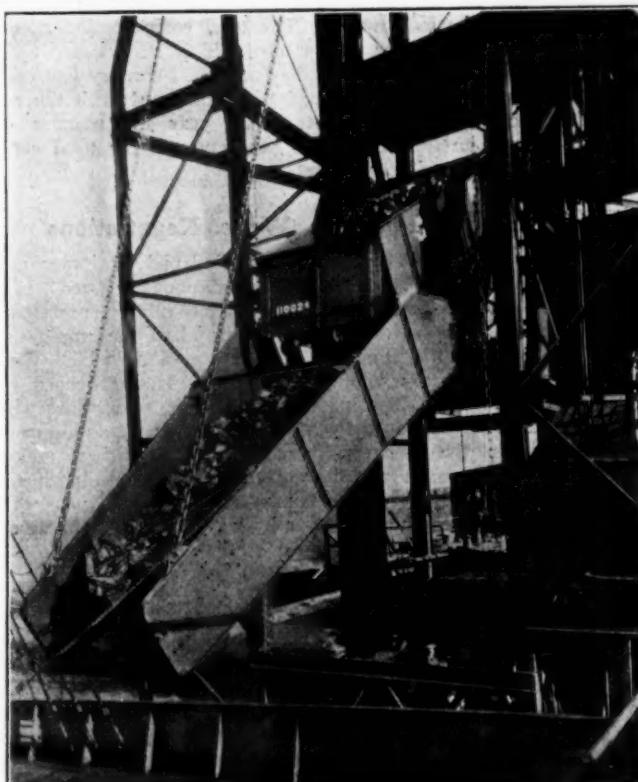
(7) When passing the telegraph block station at Douglass, a "19" order was picked up, instructing the freight train to clear for No. 22 on time and the engineman and conductor conferred as to the point where they should clear No. 22. They finally decided that if No. 111 should not interfere with the movement past Bucyrus station, they would make Crestline instead of taking siding at Robinson. The train arrived ahead of No. 22 at 4:30 p.m., making the run in about 6 hours and 30 minutes.

These tests were conducted under the personal super-

vision of W. P. Hallstein, supervisor of telegraph and signals, and G. W. Bradley, trainmaster, who estimated that an hour in running time was saved by the use of the 'phones enabling the conductor and engineman to communicate with each other at the several points to determine how each move should be made. On the return trip the next day the telephones were used to advantage while attending to some hot boxes during a snow-storm.

Milwaukee Engines Average 64,290 Miles Per Failure

THE reliability of operation of the 2,200 steam and electric locomotives used on the Chicago, Milwaukee & St. Paul, is indicated by their average performance of 64,290 miles per failure, these figures having been supplied in a statement recently issued by H. E. Byram, receiver. The mileage mentioned is equivalent to 15 round trips between Chicago and Seattle, Wash., without a delay of two minutes chargeable to engine trouble. The Chicago, Milwaukee & St. Paul records as an engine failure any trouble, trivial or otherwise, causing a delay of two minutes to a passenger train or five minutes to a freight train, even though the delay is afterward made up by faster running time. The continuance into the present year of last year's work in reducing engine failures is shown by the development of a total of only 95 engine failures in the first two months of 1926 as compared to 189 for the same period in 1925, the mileages per engine failure for the two periods being 87,887 and 45,613 respectively. Passenger train car defects causing failures also showed a decrease from 182 for the first two months of 1925, to 106 for the first two months of 1926, with mileages between failures of 89,437 and 150,874 respectively for the two periods.



Dumping a Great Western (England) 20-Ton Coal Car

General News Department

Consideration of the Railroad Labor Bill was begun in the Senate after it had been made unfinished business, following the passage of Public Buildings Bill on Wednesday.

Class I Railroads in March had net railway operating income of \$94,522,000 at an annual rate of 5.13 per cent on the property investment. For the first quarter this year the rate of return was 4.8 per cent.

The airplane mail and express service of the National Air Transport, Inc., between Chicago and Dallas, Tex., was inaugurated on May 8. Planes leave Chicago early each morning except Sunday, arriving at Dallas approximately 12 hours later, a similar schedule being maintained northbound.

The Interstate Commerce Commission Thursday made public a proposed report by Examiner Dais recommending a finding by the Commission that acquisition by the Norfolk & Western of control of the Virginian is not in public interest, because it would eliminate competition between the two roads and eliminate existing routes.

For railroad men attending the convention of the mechanical division of the American Railway Association at Atlantic City, N. J., June 9 to 16, arrangements have been made for the issuance of trip passes good from June 1 to June 30 inclusive, application to be made by each individual to the pass bureau of those roads with which his own road normally exchanges requests for free transportation. This arrangement is intended to supplant the former practice under which the Pennsylvania, the Reading and the Central of New Jersey issued short term passes good over the entire system.

Wage Statistics for February

The number of employees reported to the Interstate Commerce Commission by Class I railroads for the month of February, 1926, was 1,733,004 an increase of 2,933 or 0.2 per cent over the number reported for the previous month. The total compensation shows a decrease of \$11,671,566 or 4.9 per cent. This large decrease in compensation is due principally to the fact that February had only 23 working days while January had 25. Compared with the returns for the corresponding month last year the number of employees shows an increase of 0.4 per cent and the total compensation an increase of 1.9 per cent.

Brotherhoods Postpone Wage Negotiations

At the request of the Brotherhood of Railroad Trainmen and the Order of Railway Conductors, negotiations between these organizations and the committee of operating officers representing the western railways on the wage demand of the employees, have been postponed indefinitely. The negotiations which were suspended several weeks ago were to have been reopened on May 3. Conferences of the representatives of the two unions with the committee from the eastern roads held recently were adjourned on the request of the railroads for more time in which to gather data on which to reach a decision. At a conference with the southeastern roads last week the unions' representatives were told that these roads had nothing to offer by way of changes in wages and working conditions.

The Family Spirit in Industry

The Traffic-Transportation Club of the Pennsylvania System held its annual dinner at the Congress Hotel at Chicago on May 4, the dinner marking the completion of a winter course of instruction in the handling of freight and passengers. The principal speaker was Elisha Lee, vice-president in charge of operation, who spoke of the family spirit in industry as it has been developed on the Pennsylvania System in connection with the improved rela-

tions between the management and the employees as carried out within the last few years. The members of the families of the employees consider themselves a part of the railroad as truly as do the employees themselves. Mr. Lee had found that on numerous occasions his wife took as much interest in his work as did he himself.

The average attendance at the 12 lectures of the instruction course during the past year has been 110. This course was primarily designed for office workers, but other classes of workers in the Chicago district are now interested.

The toastmaster at the dinner was J. E. Weller, traffic manager of the Western region.

New Equipment

During the first three months this year Class I railroads installed in service 21,363 freight cars, according to reports with the Car Service Division of the American Railway Association. This was a decrease of 22,790 cars, as compared with the corresponding period last year of 16,289 cars compared with 1924. The total included 9,582 box cars, 9,069 coal cars and 1,206 refrigerator cars.

In March the railroads placed in service 8,546 freight cars, including 3,934 box cars, 3,477 coal cars and 544 refrigerator cars.

Class I railroads on April 1 had 49,524 freight cars on order, an increase of 3,398 compared with last year but a decrease of 19,774 compared with 1924. Of the total 20,846 were box cars, 20,237 coal cars and 6,099 refrigerator cars.

Also 570 locomotives were placed in service during the first quarter 1926 an increase of 140 compared with the first quarter in 1925 but a decrease of 91 locomotives compared with 1924. Class I railroads on April 1 had 738 locomotives on order, compared with 315 on the same date last year and 520 on the same date two years ago.

These include new, and leased equipment.

Proposed Railroad Legislation

The Gooding interest bill has been included by the Senate steering committee in a program of six bills it has added to the program mapped out for the remainder of the present session of Congress, according to a letter addressed to the Senators on April 30 by Chairman Wadsworth of that committee. The railroad labor bill was listed second on the program as it now stands, after the public buildings bill, and the interest bill was sixth in the list.

The Cummins consolidation bill was reached on the Senate calendar on April 29 but was passed over at the request of Senators Cummins and King.

A letter from Postmaster General New, opposing the Kelly bill to require railroads to provide steel cars for the railway mail service as being too drastic in its provisions, was read at a hearing on the bill before a sub-committee of the House postoffice committee on April 30. The Kelly bill, he said, would be confiscatory and would demoralize the service because it would prohibit the use of present cars, whereas it would be a physical impossibility for the railroads to furnish the character of equipment required without having a reasonable time. He suggested a substitute which he said would meet every requirement and "ought not to be objectionable, to a serious degree, to the railroad companies." Ben B. Cain, vice-president of the American Short Line Railroad Association, appeared in opposition to the bill on the ground that many short lines could not afford the expense of purchasing the required cars and also that there is very little hazard to mail clerks on such lines.

Representative Shallenberger of Nebraska has reintroduced as H. R. 11,887 a bill which was introduced at the last session of Congress, to amend section 26 of the interstate commerce act to make railroads and their officers and directors liable to penalties on account of accidents attributable in whole or in part to any

failure to comply with an order of the commission requiring the installation of automatic train control and also providing a penalty of \$1,000 a day for failure to comply with such an order of the commission.

Bronze Memorial of R. C. Richards

On the 71st anniversary of his birth, April 6, the National Safety Council dedicated a bronze memorial to the memory of R. C. Richards, founder of the safety first movement on the railroads of America, who died on January 3, 1925. The tablet is affixed to the base of one of the columns in the waiting room of the Chicago & North Western passenger terminal at Chicago. Among those participating in the dedication of the tablet, as shown from left to right in the accompanying photograph, were C. B. Scott, president of the National Safety Council, Robert W. Campbell, first president of the National Safety Council, F. W.



Tablet to R. C. Richards
Chicago & North Western Station, Chicago

Sargent, president of the Chicago & North Western, and A. V. Rohweder, chairman of the dedication committee.

The memorial is in honor of Mr. Richards' life work in the conservation of human life and his pioneer labors in accident prevention on American railroads. From 1910 to 1924 he was chairman of the safety first organization of the Chicago & North Western, and the records of deaths and injuries of employees on that road showed for a term of years some of the most remarkable results of safety work. Mr. Richards was one of the founders of the National Safety Council and was its president in 1919-1920.

Electrical Section, A. R. A., Reorganized

At a recent meeting of the General Committee of Division IV—Engineering—of the American Railway Association, revised regulations for the government of the Electrical section, which had been adopted by letter ballot, were ratified and confirmed. These provide that the Electrical section shall consist of the personnel of the Committee on Electricity of the American Railway Engineering Association and persons connected in an official or advisory capacity with the application of electricity to railway service; and that the affairs of the section shall be administered by a Committee of Direction, consisting of nine members, to be selected annually by the General Committee of Division IV.

The Committee of Direction is to hold annual sessions in March, concurrently with the annual sessions of the Construction and Maintenance section (A. R. E. A.) and hereafter the chairman, vice-chairman and chairmen of the standing committees of the Electrical section are to constitute the Committee on Electricity of the American Railway Engineering Association; while the chairman, vice-chairman and three members of the section, to be appointed annually in March by the Committee of Direction, are to be the representatives of the section on the General committee of Division IV.

In accordance with these new regulations the General committee

appointed E. B. Katte (N. Y. C.), S. Withington (N. Y., N. H. & H.), H. M. Bassett (N. Y. C.), D. J. Brumley (I. C.), J. C. Davidson (N. & W.), J. H. Davis (B. & O.), J. V. B. Duer (Penn.), F. D. Hall (B. & M.), and W. M. Vandersluis (I. C.), as members of the Committee of Direction. The newly-selected committee, at its first meeting, elected Mr. Katte chairman and Mr. Withington vice-chairman (already holding those offices) and established 13 standing committees, later adding a fourteenth.

American Society for Steel Treating Holds Spring Meeting at Hartford

The spring sectional meeting of the American Society for Steel Treating will be held at the Hotel Bond, Hartford, Conn., May 20 and 21. At 10 a. m. Wednesday, May 19, there will be a meeting of the board of directors, and at 6 p. m. dinner and registration, followed by a short automobile ride. The program for the meeting is as follows:

THURSDAY, MAY 20

8:30 a.m.—Registration.
9:30 a.m.—Recrystallization Temperatures of Cold-Rolled Electrolytic Iron and Open Hearth Steel Strip, by John R. Freeman, Jr., Bureau of Standards, Washington, D. C.
10:30 a.m.—Factors Affecting the Machinability of Alloy Steels, by J. S. Vanick, International Nickel Company.
1:30 p.m.—Plant inspection at the plants of: Billings & Spencer Co.; Colt's Armory; Hartford Rubber Works; Pratt & Whitney Company; Royal Typewriter Company; Underwood Typewriter Company, and Union Drawn Steel Company.
6:30 p.m.—Banquet, Ball Room, Hotel Bond.

FRIDAY, MAY 21

9:30 a.m.—Necessary Precautions in the Manufacture of Alloy Steels, by Marcus A. Grossman, United Alloy Steel Company, Canton, Ohio.
11:30 a.m.—Forging by the Upset Process, by J. C. Kielman, New Departure Manufacturing Company, Bristol, Conn.
1:30 p.m.—Plant inspection of New Departure Manufacturing Company, Bristol, and International Silver Company, Meriden, Conn.
7:00 p.m.—The Role of Stainless Iron and Steel in Industry, by Norman L. Mochel, Westinghouse Electric & Manufacturing Company, Philadelphia.
8:00 p.m.—Heat Treatment of Die Blocks, by Alfred J. Porter, Jr., Hephzibah Forge Company, Bridgeport, Conn.

On Saturday, May 22, there will be special plant inspection trips as requested by members.

English and American Signaling

Joshua Parsons, formerly of the Midland Railway, England, but now signal engineer of the Central Argentine, South America, has lately visited England and America, and in a paper before the Institution of Railway Signal Engineers, London, presents various comparisons between English and American practice. He finds American opinion, as between electric interlocking and electro-pneumatic, about equally divided. The small compressor plant now available makes electro-pneumatic simple and economical, and the necessity of providing pneumatic power is not a disability. He praises both of the New York terminals, the Pennsylvania, with electro-pneumatic and the Grand Central with all-electric, interlocking; and evidently thinks the English might well learn from either of these stations. In signal aspects, Mr. Parsons is very favorably impressed with the position-light signal, but he thinks that the scheme of aspects in America is over-elaborate. The color-light signal also proves so excellent that he can call it nothing less than a simple, effective and efficient signal.

On automatic train control Mr. Parsons says: The railways have been compelled by law to install trial lengths of some form of train control. This is at the present time a subject of much debate and experiment amongst both railway officials and manufacturers; the latter have spent and are spending large sums in the most enterprising manner in developing various systems. * * * If any device is ultimately adopted to any large extent, Mr. Parsons continues, it will be one operating on an inductive principle; also, it will be one of the simpler forms, and not those containing definite speed-controlling features, and the very elaborate devices which are involved thereby. There seems to be little doubt that even with the introduction of automatic control it is not desirable to attempt to dispense with fixed signals nor to omit any of the protection provided by existing installations.

Although unquestionably much can be said, Mr. Parsons further asserts, for the attempt to eliminate accidents resulting from "man failure," yet even after all the most elaborate precautions have been taken it is almost impossible to make any apparatus absolutely foolproof, and failure may still occur. "If a railway is to be operated as a business concern, it cannot be expected to provide more than what can justly be considered as a reasonable degree

of protection, and it would appear to be very hard to justify economically the very heavy expense involved by the introduction of any form of automatic train control, except, of course, train-stops on electric suburban railways such as the London Underground."

The Canadian Roads in March

The Canadian National figures for March showed the largest net earnings of any March since the amalgamation in 1922, and for the first three months of 1926 the operating net were considerably ahead of the same period last year.

Gross earnings during the month of March, 1926, amounted to \$21,255,004, as compared with \$18,233,944 in March, 1925, an increase of \$3,021,060 or 16.57 per cent. Operating expenses amounted to \$17,063,159, an increase of \$464,938 or 2.80 per cent over March, 1925. Net earnings were \$4,191,845, as compared with \$1,635,723 during the corresponding month of last year, an increase of \$2,556,122 or 156.27 per cent.

A drop in the operating ratio from 91.03 per cent in March, 1925, to 80.28 per cent in March, 1926, was also accomplished.

	1926	1925	Inc.	P.C.
March:				
Gross	\$21,255,004	\$18,233,944	\$3,021,060	16.57
Oper. exp.	17,063,159	16,598,221	464,938	2.80
Net	\$4,191,845	\$1,635,723	\$2,556,122	156.37
Three months ending with March:				
Gross	\$57,004,263	\$51,436,454	\$5,567,809	10.82
Oper. exp.	49,866,376	48,916,204	950,172	1.94
Net	\$7,137,887	\$2,520,250	\$4,617,637	183.22

Net earnings of the Canadian Pacific Railway for March were the highest since March, 1918, while the net for the first three months, \$6,531,067, was the highest for that period since 1917. The net for the month under review was higher by \$706,965 than that shown for March of last year, while for the first quarter of this year there is revealed an increase in net of \$2,675,385 over those shown in the first quarter of last year.

Following are the gross earnings, operating expenses and net for the month of March and for the first three months, with comparisons:

	1926	1925	Inc.
Gross	\$14,261,818	\$12,931,546	\$1,330,271
Oper. exp.	11,437,641	10,814,334	623,306
Net	\$2,824,177	\$2,117,212	\$706,965
Three months—			
Gross	\$40,344,958	\$36,614,770	\$3,730,187
Oper. exp.	33,813,891	32,759,089	1,054,801
Net	\$6,531,067	\$3,855,681	\$2,675,385

Superintendents' Association June 15

The thirty-third annual meeting of the American Association of Railroad Superintendents will be held at the Windsor Hotel, Montreal, Que., on June 15-18. The Canadian National will provide a special train leaving Chicago at three o'clock Sunday afternoon, June 13, and arriving at Montreal at 2 p. m. on Monday. The convention will be opened by an address of welcome by Sir H. W. Thornton, president of the Canadian National. The subjects to be discussed include the following: Classification of freight trains; blocking loads in trains to permit quicker handling; control of freight car movements in terminals; the best method of determining the most economical trainload for a given district or division; a standard, accurate, economical and rapid method of computing tonnage in trains; the best method of operation of through, local and way-freight trains to avoid overtime and secure the most economical handling; the best method of getting cooperation from the various departments concerned in train movements; unnecessary transfer of cars at interchange points (the run-repair-or-transfer proposition); manual block rules and the manner in which Rule 93 (yard limit rule) is observed; securing greater efficiency from locomotives; what data will enable the superintendent to control his operating expenses most effectively with a fluctuating traffic and revenue; the desirability of increasing carloading and the influencing factors; schedule handling of package and l. c. l. freight; when passenger schedules are disarranged what is the most desirable method to use at terminals in conveying the necessary information to the traveling public; organization of fuel economy campaigns; how to meet motor truck and motor bus competition. R. E. Woodruff, superintendent of the Erie, at Buffalo, N. Y., will address the association.

Traffic News

Frisco's Strawberry Traffic

The St. Louis-San Francisco estimates that 2,500 cars of strawberries will be shipped over its lines from the Ozark section in the 30 days beginning May 5. The strawberries will move on special fast trains to Oklahoma City, Okla., Wichita, Kan., Memphis, Tenn., Kansas City, Mo., and St. Louis.

To Reduce Chicago-Los Angeles

Running Time by Five Hours

Passenger train schedules between Chicago and Los Angeles are to be reduced next autumn by about five hours on all three routes—the Atchison, Topeka & Santa Fe, the Chicago & North Western-Union Pacific, and the Rock Island-Southern Pacific routes. A similar reduction in the schedules of limited trains will be made by the North Western-Union Pacific between Chicago and San Francisco. The trains will leave Chicago in the evening as at present, but will arrive in Los Angeles about 9 o'clock in the morning instead of 2 in the afternoon. Eastbound, the limited trains will leave Los Angeles in the evening instead of at noon. An extra fare of \$10 will be charged in each direction on these trains. The new schedules will become effective the last of September.

Motor Transport News

New Haven's Boston-Providence Service

The New England Transportation Company, the bus subsidiary of the New York, New Haven & Hartford, on May 3, began the operation of bus service between Boston, Mass., and Providence, R. I., under a temporary permit from the Massachusetts Department of Public Utilities and the Public Utilities Commission of Rhode Island.

B. & O. May Operate Buses in New York

The Baltimore & Ohio, it is reported, will operate buses between the mid-town section of New York and the Jersey City terminal of the Central of New Jersey which will be the road's New York terminus after it abandons the use of the Pennsylvania station on September 1. This plan, together with other changes which will be made in connection with the new terminal arrangements, the company characterizes as embryonic.

Rutland Secures Authority to Operate Buses

The Public Service Commission of New York has granted the petition of the Rutland Railroad to discontinue passenger service in connection with local freight trains Nos. 203 and 204 between Chatham and the Vermont State line, about 50 miles, and substitute bus service therefor. The permission is given upon the express condition, however, that the present passenger train service shall be restored during such periods as the bus shall be unable to operate.

The company has organized the Rutland Transportation Corporation for the purpose of giving bus service between Chatham, N. Y., and Bennington, Vt., in place of the mixed train. Travel on the mixed trains has been light and the revenue very small, and this company can save \$30,000 a year by eliminating the mixed trains and operating one local freight train instead of two, alternating in direction every other day.

To protect the Wager Auto Bus Line the Rutland on the north and eastbound trips must take no passengers between the Petersburg highway and Bee Hive Crossing, a distance of about four miles.

The Rutland Transportation Corporation was authorized to issue \$30,000 in common capital stock for the purchase of three buses and for working capital, and the Rutland Railroad was authorized to acquire and hold this stock.

Commission and Court News

Interstate Commerce Commission

The commission has suspended until September 2 proposed increases in the rates on petroleum oil and its products from points in Texas to Vicksburg, Miss.

The commission has suspended until August 31 the operation of proposed increases in the proportional freight rates on structural iron and steel articles from Vicksburg and Natchez, Miss., to Shreveport, La.

The commission has suspended until August 29 the operation of schedules which propose to increase the freight rates on salt from producing points in Ohio, eastern Michigan and the Buffalo-Pittsburgh group to Memphis, Tenn.

The commission has suspended until August 29 the operation of tariff schedules which propose to increase the rates on pig iron from Toledo, Cleveland and other producing points in Central Freight Association territory to destinations in Central Freight Association territory.

The commission has suspended until August 29 the operation of tariff schedules which propose to increase the carload rating on pitch, paving or roofing, and on tar, coal, oil, paving or roofing, from 70 per cent to 80 per cent of sixth class rate on shipments moving between points in Central Freight Association territory.

The commission has suspended until August 29 the operation of tariff schedules which propose a general readjustment of rates on grain from Colorado, Nebraska, Kansas, Oklahoma and Missouri to Mississippi River Crossings, Memphis, Tenn., and points south thereof, and to points in Mississippi Valley territory resulting in both increases and reductions.

The commission has issued a decision finding the mail pay rates heretofore established not fair and reasonable for the Alabama, Tennessee & Northern after May 25, 1925 and establishing as reasonable rates from that time 25 cents for each mile of service by a 15-ft. apartment car, 6.25 cents by a 3-ft. storage space, and 7.5 cents by a 3-ft. closed-pouch space.

Rates on coke, carloads, from St. Louis, Mo., to the Missouri river cities and to destinations in Missouri and Kansas, were found unreasonable and unduly prejudicial as compared with the rates from Chicago, Ill., and Birmingham, Ala., to the same destinations, in a decision by the commission on a complaint by the M. W. Warren Coke Company. A basis of reasonable rates was prescribed for the future.

Livestock Complaint Dismissed

Rates on livestock in the territory between the Missouri river and the Pacific coast were found "not unreasonable or unduly prejudicial" by the Interstate Commerce Commission in a decision dismissing the complaint of the American National Livestock Association et al., involving particularly the rates on "stockers" and "feeders" but not those to recognized markets which move the great volume of livestock traffic. However, the commission says the record indicates the desirability for a more stable and readily ascertainable basis of rates which will facilitate the movement of stock cattle between ranges and feeding points and that it is "entirely in sympathy with complainants' desires in this respect" and reluctant to dismiss the complaint. However, in view of the conditions and of the pendency of cases involving livestock rates generally throughout this entire territory, it says:

We feel that that is the only course open to us upon the present record. This action, however, is not to be regarded as an approval of the present basis of rates on stock cattle and we strongly recommend to the defendants that they co-operate with the complainants in the establishment throughout this territory of rates for the movement of stock cattle which are adapted to existing operating and transportation conditions in the different sections and which will, in so far as possible, encourage movements direct from ranges to feeding points. Our action here is without prejudice to

complainants' right to bring the matter before us again with a view to developing a record upon which effective action may be taken, if, after decision of the cases cited, it appears that satisfactory results can not be accomplished by negotiations between the parties.

Defendants' contention that the propriety of a higher level of rates applicable to sporadic movements between ranges and feeding points than to large and regular movements to markets is not based, as complainants seem to apprehend, upon the idea of lower rates for larger than for smaller shipments, but upon the lower costs made possible by greater efficiency in handling a large volume of regular traffic than of isolated small shipments. If this were the only objection to complainants' proposals it might be met by prescribing rates in accordance with the general plan suggested but upon a somewhat higher level. Such a solution of the problem is precluded, however, by a consideration of the wide disparities in topographical, climatic, operating and transportation conditions which are encountered in this territory and which, we are convinced, render it not feasible or practical to establish for application throughout such extensive groups as complainants propose the uniform mileage scales which they suggest or some other similar basis differing therefrom only in degree. By reason of the nature of this case, substantially all the evidence was directed toward showing that the bases sought by the complainants were or were not reasonable and proper for application in the groups proposed, and it does not afford a sufficient foundation upon which to base other and different relief, nor for dealing with individual rates.

Commission Holds It Has

Jurisdiction Over Train Supply

The Interstate Commerce Commission, in a decision made public on May 5, holds that jurisdiction "to regulate the supply of trains for the transportation of property" has been vested in it by the car service provisions of the interstate commerce act and that, in the case before it, the proposed discontinuance of daily mixed train service on the line of the Northern Pacific between Beach, N. D., and Ollie, Mont., and the establishment in lieu thereof of tri-weekly service, had not been found to be unjust, unreasonable or unlawful.

The state of North Dakota had contended that it, through its state commission, had sole jurisdiction over train service within the state and that the federal commission had no jurisdiction over train service, except in emergency. The Northern Pacific had also moved to dismiss the investigation upon the ground that insofar as it related to passenger service the commission was without jurisdiction, and that with reference to the transportation of property, the evidence showed that curtailed service, as proposed, was justified. The commission had previously held that jurisdiction to regulate the operation of passenger trains had not been vested in it but that the decision was inapplicable here because in the case before it the primary service rendered by the trains is the transportation of property and not passengers. After considering the provisions in section 1 of the act the commission says:

These are fundamental and basic provisions. Paragraph 10 defines the term "car service." Paragraph 11 sets forth the duty of carriers with respect to each and all of the matters included in the definition. We think that duty is continuous and not limited to times of emergency or otherwise. It is the duty of carriers to furnish safe and adequate car service. The terms are used with equal force. Could it be said that the duty of furnishing safe car service is in force only in times of emergency? We think not and the same is true with respect to the term *adequate*. It is the duty of carriers subject to the act to furnish safe and adequate car service at all times.

From the foregoing it seems clear that the interstate commerce act makes it the duty of every carrier subject thereto to furnish an adequate "supply of trains" for the transportation of property, and confers upon us authority to determine and prescribe, after full hearing, what practice in this respect is or will be just, fair and reasonable, to be thereafter followed, and to enter an appropriate order.

United States Supreme Court

Order Requiring Reciprocal Switching Sustained

The Erie, the Chicago, Indianapolis & Louisville, the Michigan Central and the Pere Marquette all lines entering Michigan City, sued the United States in the federal district court for Indiana, to set aside an order of the Interstate Commerce Commission directing them to remove the unjust discrimination which the commis-

sion found was being practiced against the South Shore, an electric railroad, which also entered the city, by refusal to switch its interstate carload traffic and to make arrangements with it for reciprocal switching. (88 I. C. C. 525). The district court denied preliminary injunction, without opinion. This decree is affirmed by the Supreme Court of the United States. The court says that the order does not require the steam railroads to extend any service to the South Shore. It leaves them free to remove the discrimination by any appropriate action. Direct physical connection with the carrier subjected to prejudice is not an essential. The contention that the South Shore was not shown to be engaged in the general transportation of freight was held to be groundless.—Chicago, Indianapolis & Louisville v. United States. Decided March 1, 1926. Opinion by Mr. Justice Brandeis.

Rates for Shipments Within Six Months

After Termination of Federal Control

Suit was brought in a Pennsylvania court against the New York Central and the Pennsylvania to recover alleged excess charges paid by plaintiff for the intrastate carriage of coal, and ordered by the Pennsylvania Public Service Commission to be repaid by way of reparation. A judgment in favor of the shipper was affirmed by the Pennsylvania Supreme Court, 281 Pa. 257. The charges in question were for shipments in the six months following the termination of federal control. The rates charged were those in effect on February 29, 1920.

Reversing the judgment of the state court, the Supreme Court of the United States says, in part: "By Sec. 208-a of the Transportation Act, 1920 (February 28, 1920, c. 91; 41 Stat. 456, 464) prior to September 1, 1920 no such rate could be reduced unless the reduction was approved by the Interstate Commerce Commission, the six months concerned being the period during which the United States guaranteed certain income to the railroads by Sec. 209. The commission had not approved any reduction and therefore it is plain that the state commission had no authority to intermeddle with the rates that it undertook to cut down. It is true that regulating rates and awarding reparation are different matters. But the prohibition in the statute covers either method of reducing the pay received by the roads. Whether the rates were right, or were wrong as the state court thinks, they could be changed only in one way."

It is held that the railroads had not waived their rights by their failure to appeal from a decision on an earlier complaint to the state commission holding that a lower rate was reasonable and that reparation would be awarded on presentation of a petition with the supporting data. There was no order in that hearing that the railroads could have brought before the federal Supreme Court.—N. Y. C. v. N. Y. and Penn. Decided April 26, 1926.

Opinion by Mr. Justice Holmes.

Shippers and Consignees May Be Indicted for Concessions Fraudulently Obtained Without Knowledge of Carrier

The Supreme Court of the United States has reversed the judgment of the federal district court for eastern Michigan (United States v. The P. Koenig Coal Co., 1 Fed. 2d, 738), holding that section 1 of the Elkins Act (re-enacted in section 2 of the Hepburn Act) applies only to a shipper who knowingly receives a concession from a carrier when such concession is knowingly granted by the carrier in equal guilt with the shipper.

The coal company was indicted under the Elkins Act for knowingly receiving as a shipper concessions from a carrier in respect of transportation of property obtained by deceitful representations made to the carriers on which the carriers in good faith had innocently relied. The coal company had obtained preference and priority for shipments of coal under an emergency Service Order No. 23 by representing that they were for the use of a hospital. The order placed such coal in class 2. The indictment charged that the shipments were for the use of an automobile manufacturing company which were placed in class 5 and later in class 3. The district court sustained a demurrer to the indictment on the ground that the offense charged cannot be committed without the guilty knowledge and collusion of both the shipper and carrier. The Supreme Court is of opinion that collusion

between shipper and carrier is not necessary in such a case.—United States v. P. Koenig Coal Co. Decided April 12, 1926. Opinion by Mr. Chief Justice Taft.

Under facts similar to those in the P. Koenig Coal Company case, a cement company was indicted for obtaining coal on the assumption by the carrier that the coal was for a public utility company which was in class 2 under Service Order No. 23 instead of class 5, in which coal for making cement is embraced. Also, another ground advanced by the defendant was that the Elkins Act was limited to a concession violating a published tariff. The court held that the service order, issued under the Transportation Act, had the force of law; and in the absence of a specific requirement for its publication in a tariff such publication was not essential in the enforcement of the statute.—United States v. Michigan Portland Cement Co. Decided April 12, 1926.

Opinion by Mr. Chief Justice Taft.

State Tariff Regulation Suspended by Federal Control, Automatically Revived March 1, 1920

A passenger on an intrastate journey in Missouri over the Missouri Pacific checked a trunk which was not delivered to her, a thief obtaining possession by changing checks. She sued the railroad in a state court, claiming that, under § 9941 Missouri Rev. Stat. 1919, she was entitled to full value. This act, passed in 1855, had never been suspended or repealed by any state law. The railroad relied upon the limitation to \$100 contained in the intrastate and interstate tariff filed under the Federal Control Act, contending that, by § 208a of Transportation Act, 1920, this limitation remained in force as applied to intrastate commerce because the provision for unlimited liability in § 9941 Mo. Rev. Stat. had not been re-enacted after the termination of federal control. Judgment for \$1,000 and interest was affirmed by the St. Louis Court of Appeals, the court holding that the misdelivery was a conversion rendering the carrier liable for full value; and that the state law governed because the journey was intrastate.

The case came before the Supreme Court of the United States on certiorari, the sole question being the construction and effect to be given to Sec. 208a which, by its first clause, provides that all rates, fares, charges, etc., in effect on February 29, 1920 (when federal control terminated) shall continue in force until thereafter changed by state or federal authority, respectively, or pursuant to authority of law.

The Supreme Court says that the provision in the baggage tariff limiting liability is within the purview of that section. There was no legislation by the state on the subject after the termination of federal control. The state had confessedly power to restore the full statutory liability as applied to intrastate commerce unless the Interstate Commerce Commission should, for the purpose of preventing discrimination against interstate commerce, issue an order to the contrary. There was no such order. The precise question was whether the state provision, which had been suspended by the filing of the tariffs of the director general, became operative on September 1, 1920, without re-enactment, or whether affirmative action by the state after February 29, 1920, was necessary to restore the full liability.

The court construes the first clause of § 208a as follows: "In order to remove doubts as to what tariffs were to be applicable after the termination of federal control, Congress declared that the existing tariffs, largely initiated by the director general, should be deemed operative, except so far as changed thereafter—that is, after February 29, 1920—pursuant to law. Such modification of intrastate tariffs might result from action of the carriers taken on their own initiative. It might result from orders of the Interstate Commerce Commission. It might result from the making either of new state laws or of new orders of a state commission acting under old laws still in force and again becoming operative. Or such modification might result from the mere cessation of the suspension, which had been effected through federal control, of statutes or orders theretofore in force and still unaffected by any action of the authority which made them. In any of these cases, the change would be effected 'thereafter';—that is, after the termination of federal control. The statute of Missouri enforced by its court was in effect in 1922. The judgment is affirmed."—Missouri Pacific v. Boone. Decided March 22, 1926.

Opinion by Mr. Justice Brandeis.

Labor News

The request of enginemen, firemen, hostlers and hostler helpers on the Toledo, Peoria & Western for increases in wages (five per cent), such as were granted on the New York Central in January, 1924, was granted by the Board on May 3, the increases being retroactive to February 1, 1926.

The United States Railroad Labor Board, on April 29, denied the petition of the Order of Railroad Telegraphers asking for increases in pay for telegraph employees on the Southern Pacific. The request of these employees for favorable freight rates for provisions for their own use was also denied.

Labor Board Decisions

Yard Track Gangs Held Not

Necessary to Continuous Operation

According to a recent interpretation by the Labor Board a section foreman and section laborers regularly assigned to perform track maintenance work in yards are not to be considered as "employees necessary to continuous operation of train yards" for the purpose of excluding them from a right to punitive overtime for work on Sundays and holidays. According to the board "it has been the universal practice to relieve this class of employees from Sunday and holiday work except under emergency or other pressing conditions. If section gangs and section laborers are to be considered as coming within the scope of the above quoted phrase there would be no legitimate reason why practically every other class of employees of the maintenance of way department should not be considered in the same category." The decision of the board was that section foremen and their gangs when performing track maintenance work shall be paid at the rate of time and one-half on Sundays and holidays.—Interpretation No. 3 of Decision No. 2687.

Compensation While Traveling in Cabooses

The question was brought before the board as to whether bridge and building department employees who have outfit cars in which to live are entitled to travel time, according to the provisions of Rule 43, while directed to travel during overtime hours on the train in which their outfit cars are being transported, but are required to ride in the caboose rather than in the outfit cars. The employees contended that they should be paid while traveling in cabooses because they could not go to bed as would be the case if they were in their own bunk cars and that this was the obvious intent of the provisions of Rule 43. The management contended that Rule 44 applied, which provides for straight time when traveling during the normal working period; also that employees required to travel in cabooses beyond their normal retiring time would be compensated for such time in accordance with Rule 43, but that this would not apply to travel during the early evening hours.

The opinion of the board is that the offer of the carriers to compensate as stated above is just and reasonable and decided against the rigid interpretation of Rule 43.—Decision No. 4086.

THE SOUTHERN PACIFIC announces that local train service will be begun on July 1 on the new line from Eugene, Ore., to Klamath Falls. It is expected that the completion of the line to Weed, Cal., will not be accomplished before September.

HOLDING that the National Guard, when not in the service of the United States, is no part of the military establishment of the government, the Court of Claims has ordered a judgment in favor of the Louisville & Nashville for \$14,828 on the ground that it was entitled to pay for the transportation of members of the National Guard free of land-grant deductions. The same was declared true of the United States Coast Guard, which is said to be a part of the military establishment only in time of war.

Foreign Railway News

Electrification Progress in Italy

The newly electrified railway between Sestri Levante, Italy, and Spezia has been opened. Its length is 27 miles. The line from Modane, on the French frontier, to Sestri Levante, a distance of 225 miles, is now completely electrified. Within a few months electric operation will be extended to Leghorn by the conversion of another section 58 miles long. At present the total length of electrified line in Italy is 552 miles.

The Strike in Great Britain

Organized railway employees, except those allowed by the unions to remain on duty to keep milk and perishables moving, were called out on strike in the general strike in Great Britain effective at midnight, May 3.

Railway transportation, except in the essential services mentioned above, is reported to be virtually at a standstill. The strike includes the London subways and suburban lines as well as through service. The great volume of traffic now moving is going by motor vehicles over the highways. Most of these, however, are manned by volunteers because regular highway transport workers as well as railway employees are included in the strike order. The four principal railways, it is reported, are offering a skeleton service with trains manned by volunteers.

One of the leaders of the general strike, J. H. Thomas, is an officer of the National Union of Railwaymen. He bears the reputation of being more conservative-minded than many of the other strike leaders and is counted upon to combat revolutionary steps or violence within the ranks of the strikers.

The present strike is the third important one involving railway employees since the war. Neither of the other two were successful from the point of view of the strikers, motor transport and volunteer service on the railways having rendered them ineffective.

Rumania to Improve Railways

The Rumanian government, according to the Times (London), proposes to tackle immediately and with all the means at its disposal the reconstruction of railways, on which more than anything the economic recovery of the country depends. If in other respects Rumania has undeniably made some progress during the past few years, this is not true of railway transport, as can be seen from the following table showing the quantity of rolling-stock at the end of March, 1926, as compared with the beginning of 1922:

	1922	1926
Locomotives	1,643	1,888
Passenger cars	3,373	3,487
Freight cars	43,955	41,939

During the last twelve months especially, the inefficiency of railway transport has to a large extent been responsible for the decline of exports.

It is obvious that a vast program of railway reconstruction cannot possibly be achieved without outside help, and it is understood that it is the intention of the government to try to obtain a foreign loan to be used exclusively for the purpose of repairing the permanent way, buying locomotives and rolling stock and re-fitting the repair shops. It is estimated that a sum of \$125,000,000 would cover the requirements. The fact that the railways have been made autonomous and are at present run on commercial lines may, in the opinion of the government, render the negotiation of a loan less difficult than when they were part of the state administration.

Statistics for British Roads Show 1925 Slump

The total capital expenditure of British railroads in 1925 was £1,198,600,000, as compared with £1,190,574,786 in 1924 and with £1,141,543,561 in 1913, according to preliminary returns recently issued by the British Ministry of Transport, and reported by the Department of Commerce. The capital expenditure in excess of capital receipts in 1925 was £46,900,000, against £56,925,931 in 1924 and £35,351,703 in 1913. The balance sheet for 1925 shows

a balance available for dividends and reserves (less interim dividends paid) of £21,200,000, as compared with £22,179,135 in 1924.

The total railway mileage open for traffic in Great Britain in 1925 was 52,231. The Southern Railway had 5,457 miles (reduced to single track), the Great Western had 8,913 miles, the London, Midland & Scottish had 19,776 miles, and the London & North Eastern had 17,374 miles.

During 1925 passengers carried on all the railroads of Great Britain numbered 1,232,561,000, compared with 1,236,210,027 in 1924. Of the 1925 total, the London Midland & Scottish handled 333,527,248, the London & North Eastern 220,533,133, the Southern 192,188,233, and the Great Western 119,692,256.

The total freight traffic (including minerals) amounted to 315,848,000 tons in 1925, as against 335,496,000 tons in 1924.

Soviet Railway Chief Paints Gloomy Picture

In a recent speech before the Eighth Congress of Railway Workers in Moscow, Rudzutak, the People's Commissar for Communications, outlined the position of railway transport in the Soviet Union and his views were reported by the *Times* (London) as follows:

The position as regards rolling-stock, he said, was critical. No new cars had been built during the last years of the war or since the revolution. Works had not yet delivered a single new car of those ordered last year, and there was no hope of receiving any for some time to come—indeed, the works were scarcely yet used to car-building. It would be three years before the output of new cars would meet requirements. The rolling-stock in use had been deliberately sacrificed by postponing current repairs in order to cope with the heavy traffic. Of the 125,000 cars which last year lay discarded as beyond repair only 40,000 remained, the rest having been overhauled and put into service again; but no more could be taken from this source. There were no more reserves to draw upon, and a deficiency of 30,000 cars and 500 locomotives was to be expected this year.

The condition of the repair shops, which were fully loaded, was bad. Lathes were almost useless and much work had to be done by hand. Supplies of metal were only 65 per cent of requirements and the proportion of rejections was increasing (50 per cent for telegraph wire). Repairs had thus fallen short of program in the first four months of the financial year by 97 locomotives and 1,367 cars.

The chief cause of anxiety was, however, the state of the track. In 1923-4 some 400 miles of track were laid, last year some 530 miles, and this year it was hoped to lay some 2,300 miles; but this was a trifle compared with needs—it did no more than keep the main sectors up to the previous year's condition. It was proposed to buy 22,000,000 and lay 18,000,000 ties, but, thanks to the new Treasury allotment methods and stumpage dues introduced last year, ties could not be got at the estimated price of two roubles, and the original program had been cut down. The luxury of using untreated ties good for two or three years only, was permissible when ties did not cost more than 1.20 roubles; it was out of the question now, when they cost 3.10 roubles, and the necessary treatment would postpone a great deal of tie-laying until next year. Then, some of the rails received crumbled under the weight of a locomotive or shredded in a few months, while rails 40 years old were in a comparatively good condition.

Inspection and management were carried out in a slipshod manner, and accidents were on the increase. Enginemen sometimes fell asleep, stop signals were passed, switches set wrongly, inspections of trains neglected, incorrect coupling and loose brake nuts were common. Fifteen miles of track visited by the commission a week after it had been relaid had 80 per cent of the nuts not properly tightened and 90 per cent of the spikes not properly driven in. The only means of increasing the capacity of the railways was to be found in reducing stoppages, switching operations, etc., so as to get a quicker turnover of rolling stock, and in avoiding accidents by better management. The condition of the track and rolling-stock did not permit of faster speeds in actual travel, and their improvement depended upon funds from outside for capital expenditure.

Wages had given serious concern for the last two years, but had now been brought more or less into line with those of other industries; the average rate per month ruling at the beginning of 1924-25 of 41 roubles had grown by the beginning of 1925-26 to 58 roubles. The results of labor were, however, tending to fall, but good work could hardly be expected so long as station staffs

were housed in cars and tents, workers' settlements consisted of dug-outs, and assistant stationmasters received lower pay than laborers. Wages should depend upon responsibility and nervous strain. Finance was the crucial question. Last year's growth in traffic of 41 per cent, with the consequent increased revenue of 4 to 5 million roubles, had weakened the financial position of the railways. The big receipts of over 3,000,000 roubles a day had misled the government into regarding the railways as a prosperous concern. Budget expenditure had been fixed at 1,335,000,000 roubles, but when the State Planning Commission found that the estimated mileage did not provide the revenue it fixed the revenue rate per pood-verst at 0.026 copecks in face of the railway calculation of 0.023 copecks. This false basis meant that losses grew as traffic grew. The metal and fuel industries were put upon a paying basis, but railways had to transport their products at a loss. There was no commercial justification for transporting petroleum 1,350 miles and coal 2,000 miles at extremely low freight rates. Transport was paying more for materials and receiving less for its services than before the war. Passenger rates had been increased by 15 per cent, but, without higher freight rates corresponding to market prices, the railways could not pay their way. The issue of the reconstruction loan had stopped ordinary bank credits, but the railways had received from this source in the second quarter of the year, instead of 16,000,000 roubles, only 2,000,000 roubles. With this the construction of 7,500 miles of new railways had to be financed, so that, to avoid a stoppage, working funds had to be diverted. Instructions had just been given for tariffs on several categories to be raised so as to make good a deficit on the reconstruction loan of about 40,000,000 roubles.

Relief could be obtained by ordering cars abroad, but this affected the balance of trade and meant a drain on supplies of foreign currency. This was out of the question. The urgent question of re-equipping workshops had been held up owing to the inability of Soviet works to supply lathes for the next three years and the reduction of the vote to 6,000,000 roubles.

Miscellaneous

The Department of Commerce has received the following reports from its agents in various parts of the world:

Belgian firms have secured contracts for railroad cars for Colombia, in competition with American, English, and German firms. In addition to 20 passenger cars for the Ferrocarril de Girardot, 25 for the Ferrocarril del Pacifico, and 20 box cars and 5 flat cars for the former railroad, orders have been placed for 139 passenger cars and 282 freight cars.

New railway communications have been established between Poland and the Orient, leaving Warsaw at 10:10 a. m. Fridays, Sundays, and Tuesdays. They will connect at Warsaw with the Paris-Warsaw express. The Sunday train will connect at Moscow with the train for Novonikolaevsk, the Tuesday train with Tchita, and the Friday train with the train for Vladivostok every two weeks.

An agreement for the purchase of the Anatolian Railways will be sanctioned in a decree which the Ministry of Finance of Greece is reported to be drawing up.

A new electric train service over the Bombay, Baroda & Central India and the Great Indian Peninsular, between Bandra and Victoria Terminus, was put into effect February 3.

Three New Railway Lines planned for Persia are from Bendergaz on the Caspian to Teheran (362 kilometers); from Teheran to Kazvin, Hamadan, and Boroujird (506 kilometers); and from Boroujird to Mohammerah (581 kilometers).

Authorization to construct a railway in Chile by American firm has been asked of the Chilean government. The line planned will be 108 kilometers long and will extend from the Coya Norte station, which is the terminal of the Tocopilla-Toco line, to the company's copper properties at Chuquicamata.

A subsidy of 600,000 pesos for the Kansas City, Mexico & Orient Railway for extension of its lines in Chihuahua has been voted by the Legislature of that State.

THE INTERSTATE COMMERCE COMMISSION has denied a petition of the New York, New Haven & Hartford requesting a modification of the orders requiring the installation of automatic train control devices so as to exempt the official observation locomotives of petitioner from the requirement that they be equipped for train control when operated in train control equipped territory.

Equipment and Supplies

Locomotives

THE UNION PACIFIC is inquiring for 14, 4-12-2 type three-cylinder, coal-burning locomotives with 15,000-gal. cylindrical tenders.

THE FRUIT GROWERS EXPRESS Co. is inquiring for a four-wheel saddle-tank oil burning switching locomotive, with 16-in. by 24-in. cylinders, either new or second-hand, for use at its Potomac yards, Virginia, shops.

THE CENTRAL STEEL COMPANY has ordered one six-wheel switching locomotive from the American Locomotive Company. This locomotive is to have 21-in. by 26-in. cylinders and a total weight in working order of 163,000 lb.

Freight Cars

THE GEORGIA & FLORIDA is inquiring for 450 box cars.

THE ATLANTIC COAST LINE is inquiring for 50 steel underframes.

THE MIDCONTINENT PETROLEUM CORPORATION is inquiring for 12 tank cars.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for 200 underframes and 188 coal car bodies.

THE INTERNATIONAL RAILWAYS OF CENTRAL AMERICA have ordered 25 flat cars of 20 tons' capacity from the Magor Car Corporation.

THE SINCLAIR REFINING COMPANY has ordered 50 insulated tank cars of 10,000-gal. capacity from the General American Tank Car Corporation.

THE DELAWARE, LACKAWANNA & WESTERN is inquiring for 500 40-ft. double sheathed box cars, 500 steel hopper cars of 70-tons capacity and 500 steel hopper cars of 55-tons capacity.

THE TEXAS & PACIFIC has ordered 300 automobile box cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of April 10.

THE HURON PORTLAND CEMENT COMPANY has ordered 12 dump cars of 50 tons capacity, from the National Dump Car Company and the American Car & Foundry Company.

THE MISSOURI PACIFIC has ordered two automatic air dump cars from the Koppel Industrial Car & Equipment Company. Inquiry for four cars was reported in the *Railway Age* of April 10.

THE SOUTH AFRICAN RAILWAYS have ordered 20 gondola cars from the Standard Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of March 27. An order for 500 four-wheel drop-sided bogie wagons has been placed in Belgium.

Passenger Cars

THE SOUTHERN PACIFIC is inquiring for 11 dining cars.

THE SOUTHERN is inquiring for one dining car underframe.

THE GREAT NORTHERN is inquiring for 10 underframes for baggage cars.

THE DELAWARE, LACKAWANNA & WESTERN is inquiring for two 60-ft. steel combination mail and baggage cars.

THE INTERNATIONAL RAILWAYS OF CENTRAL AMERICA have ordered 16 first class and 17 second class passenger coaches, and 6 baggage cars from the American Car & Foundry Company.

Motor Vehicles

THE BOSTON & MAINE TRANSPORTATION COMPANY has ordered 8 White buses which will be equipped by the Brown Body Company with special bodies, designed to include inside baggage space.

These buses will be used in highway service substituted for train operation.

Iron and Steel

THE FLORIDA EAST COAST has ordered 6,340 tons of 90-lb. rail from the Tennessee Coal, Iron & Railroad Company.

THE SOUTH MANCHURIAN RAILWAY has placed an order in the United States for about 7,500 tons of 65-lb. rail.

THE LOUISVILLE, HENDERSON & ST. LOUIS has ordered 900 tons of structural steel from the Louisville Bridge & Iron Company.

THE SOUTHERN RAILWAY has ordered 38,600 tons of new steel rail from the Tennessee Coal, Iron & Railroad Company, 4,600 tons from the Bethlehem Steel Company and 2,000 tons from the Illinois Steel Company. The new rail will all be standard 39-ft. length and most of it of 100-lb. section. This is for delivery during the latter part of 1926 and is additional to this road's previous order for 46,200 tons ordered for delivery during the first half of 1926, making a total of 91,400 tons for the year, or sufficient to approximately relay 650 miles of track.

Machinery and Tools

THE VIRGINIAN has ordered a 600-ton hydraulic wheel press from Manning, Maxwell & Moore, Inc.

THE WABASH has ordered a 100-ton Chambersburg bushing press from Manning, Maxwell & Moore, Inc.

THE LOUISVILLE & NASHVILLE has ordered a 100-ton bushing press from Manning, Maxwell & Moore, Inc.

THE ELGIN, JOLIET & EASTERN has ordered a 14-in. by 6-ft. engine lathe from Manning, Maxwell & Moore, Inc.

THE CHICAGO & NORTH WESTERN has ordered an 18-in. by 8-ft. engine lathe from Manning, Maxwell & Moore, Inc.

THE NEW YORK CENTRAL has ordered a 3,300-lb. single frame steam hammer from Manning, Maxwell & Moore, Inc.

THE ATCHISON, TOPEKA & SANTA FE has ordered a National automatic bolt trimmer from Manning, Maxwell & Moore, Inc.

THE NILES-BEMENT-POND COMPANY has received orders recently from railroads for machine tools as follows: A side head boring mill; a 36-in. by 18-ft. lathe and two 42-in. by 18-ft. lathes.

Signaling

THE TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS has ordered from the Union Switch & Signal Company an electro-pneumatic interlocking, seven working levers, to be added to Tower No. 1, at 21st street. This tower will now have the equivalent of a 230-lever machine.

THE CHESAPEAKE & OHIO has ordered from the Union Switch & Signal Company, material for the Union intermittent inductive automatic train stop to be installed between Orange, Va., and Clifton Forge, 126 miles, single track. There will be 192 wayside inductors, and 60 locomotives will be equipped. Union color-light automatic visual signals are also being installed on this section.

NORFOLK & WESTERN has decided that on its second installation of automatic train stops—Roanoke, Va., to Shenandoah, 132 miles, it will have continuous speed control instead of the "train stop," as heretofore announced; and has directed the Union Switch & Signal Company to make the necessary changes. The introduction of automatic train control on this section involves the placing of apparatus on 50 locomotives.

THE CHICAGO & EASTERN ILLINOIS has placed an order with the Miller Train Control Corporation for complete engine equipments for 37 additional engines which run over the territory between Danville, Ill., and Clinton, Ind. This section is the road's second division under the Interstate Commerce Commission's train control order. This installation is of the Miller ramp type system, the same which is in use on the Chicago division.

Supply Trade News

A. O. Norton, Inc., has moved its offices to 310 South Michigan avenue, Chicago, from 920 South Michigan avenue.

The McClintic-Marshall Company will build a one-story brick structural fabricating shop at Chicago, to cost \$500,000.

The American Fork & Hoe Company, Cleveland, Ohio, will construct a three-story factory, 40 by 100 ft., at Ashtabula, Ohio.

The Hutchins Car Roofing Company has moved its Chicago office from 310 South Michigan Avenue, to 122 South Michigan Avenue.

The Railway Materials Company, Chicago, has moved its offices from the Wrigley building to the Old Colony building, 407 South Dearborn street.

The Walter Bates Steel Company has awarded a contract to the General Construction Company, Gary, Ind., for the construction of the first unit of its Gary plant.

H. M. Curry, Jr., has been elected president of the Premier Staybolt Company, Pittsburgh, Pa., **J. F. McGann** has been appointed assistant sales manager and **C. B. Woodworth**, technical representative.

John Hulst, assistant to vice-president and chief engineer of the United States Steel Corporation at New York, has been elected a vice-president to succeed John Reis, resigned.

The A. & F. Brown Company, engineer, founder and machinist, has removed its sales department and stock room from New York City to the company's general office and works at Elizabethport, N. J.

H. Kempner has been appointed sales manager of the Lo-Hed electric hoist division of the **American Engineering Company**, Philadelphia, Pa. Mr. Kempner has been in charge of sales promotion work for the company for the last three years.

F. O. Salee, sales manager of the pump and tank division of the **Wayne Tank & Pump Company** at Fort Wayne, Ind., has been appointed sales manager of the Domestic Appliance Division, succeeding F. S. Fenton, Jr., resigned. Mr. Salee will be succeeded by A. D. Carriger.

T. J. Powell, formerly district manager for the Galena Signal Oil Company, St. Louis, has been appointed vice-president in charge of sales for the **Union Railway Equipment Company**, in southwestern territory, with headquarters at room 2089 Railway Exchange building, St. Louis, Mo.

A. S. Osbourne, president of the **Universal Packing Corporation**, Pittsburgh, Pa., has resigned to go as mechanical officer with the Pittsburgh Terminal Coal Company. Alexander M. Donnan, secretary and treasurer, has resigned, and has been appointed on the legal staff of the Pennsylvania Railroad. **J. J. McQuillen**, vice-president of the Universal Packing Corporation, has been elected president; **J. M. Bandish**, southern district sales manager, has been elected vice-president, and **Herbert Lewis** has been appointed manager of railroad sales.

A new company to be known as **Hall-Will, Inc.**, has been incorporated under the laws of Pennsylvania to manufacture a modern line of pipe, bolt and nipple threading machinery at Pearl and Wagner avenues, Erie, Pa. **Leslie Hall**, formerly vice-president and general manager of the Williams Tool Corporation, has been elected president of the new company; **C. F. Williams**, formerly general superintendent of the Williams Tool Corporation and more recently associated with the Erie Steam Shovel Company, which connection he will still continue to hold, has been elected vice-president, and **Harry W. Sims** has been appointed secretary and treasurer. The directors of the company are **G. C. Hay**, formerly sales manager

of the Williams Tool Corporation; **J. W. McLeod**, **C. A. Rice** and **J. H. Sternberger**. Mr. Hay also will be sales manager of the new company, and Mr. McLeod, works manager.

March Locomotive Shipments

Shipments of locomotives in March from the principal manufacturing plants, with comparisons, are tabulated by the Department of Commerce as follows:

Year and month	Shipments						Unfilled orders, end of month			
	Domestic			Foreign			Domestic		Foreign	
	Total	Steam	Elec- tric	Steam	Elec- tric	Total	Steam	Elec- tric	Steam	Elec- tric
January ... 1925	98	41	12	43	2	414	322	44	33	15
February ...	88	69	7	9	3	414	318	51	33	12
March 117	88	13	14	2	461	324	51	71	15	
Total (3 months)	303	198	32	66	7	...	...	...	...	...
1926										
January ...	121	96	11	14	0	653	506	53	52	42
February ...	163	101	22	38	2	572	442	60	30	40
March 162	146	11	4	1	780	635	50	54	41	
Total (3 months)	446	343	44	56	3	...	...	...	...	...

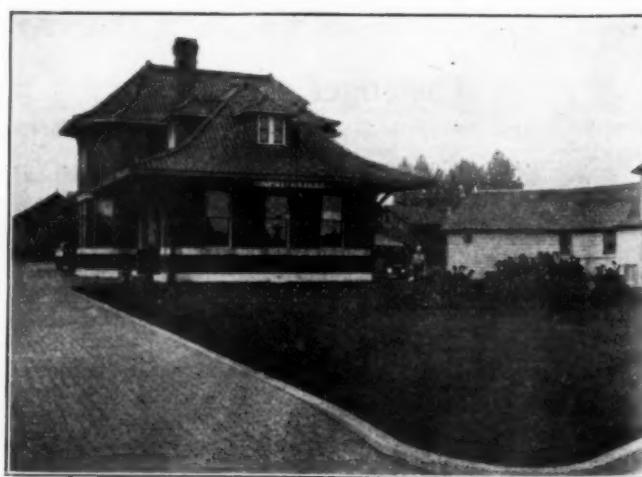
Obituary

L. R. LeMoine, chairman of the board of the United States Cast Iron Pipe & Foundry Company, Philadelphia, Pa., died on April 23 in Villa Nova, Pa., after a brief illness.

Trade Publications

THE INUNDATION SYSTEM.—The Blaw Knox Company, Pittsburgh, Pa., has issued a 16-page bulletin which comprises a complete exposition of the principles of inundating sand as a means of eliminating the bulking effect in obtaining accurate proportions in concrete. It also describes the Blaw Knox inundator, which is a mechanical contrivance for carrying on the process of inundation in a practical way in the mechanical proportioning and mixing of concrete. The subject matter is presented in an elementary way that is readily understood and illustrations are freely used to make the matter clear.

METALLIC ZINC POWDER AS A PAINT PIGMENT.—A bulletin bearing this name has recently been issued by the New Jersey Zinc Company, New York, summarizing the history and development of zinc as a paint pigment and outlining its uses and advantages. Prepared as a research report, the bulletin incorporates statements of many tests made with this material and the results obtained. The obvious purpose of the bulletin is to stimulate interest in the use of zinc dust as a pigment and to present the latest practical information and formulas in order that paints using this material may be made up.



B. R. & P. Station at Springville, N. Y.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—A contract has been awarded to Joseph E. Nelson & Sons, Chicago, for the construction of stations, section houses, bunk houses, stockyards and wells on the 30-mile line from a connection with the Panhandle & Santa Fe near Panhandle, Tex., to the oil fields in Hutchinson county, Texas.

BALTIMORE & OHIO.—This company has awarded contracts to the Vang Construction Company, Cumberland, Md., for bridge work at Martin, Ind., Noble, Ill., and Aviston, Ill., the first project to cost approximately \$30,000, the second \$25,000 and the third \$35,000.

CENTRAL OF GEORGIA.—This company is contemplating the construction of a new roundhouse at Savannah, Ga.

CENTRAL PACIFIC.—This company has applied to the Interstate Commerce Commission for authority to build a branch line of 4.68 miles in an easterly and northeasterly direction from Marysville, Calif.

CHICAGO, ROCK ISLAND & PACIFIC.—Bids have been asked for the construction of a 20-stall roundhouse at Burr Oak, Ill.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract for grading and construction of second track from McFarland, Kan., to a point near Volland, a distance of approximately 22 miles, has been awarded to the Flick Construction Company. This project will complete the double tracking of the line between Topeka, Kan., and Herington.

CHOCTAW, OKLAHOMA & GULF.—This company and the Chicago, Rock Island & Pacific, lessee, have been authorized by the Interstate Commerce Commission to abandon a line from Watonga, Okla., to Homestead (22 miles). The Chicago, Rock Island & Pacific, coincident to this authority for abandonment, has been authorized to construct a line from O'Keene to Homestead (4 miles). The new line is estimated to cost \$46,241.

DETROIT, TOLEDO & IRTON.—A contract has been awarded to the Ferguson & Edmondson Co., Pittsburgh, Pa., for the grading, fencing, and construction of reinforced concrete box and pipe culverts on the second section of the Durban-Malinta cut-off, extending 16½ miles from the Toledo-Detroit branch to the Ohio state line.

ILLINOIS CENTRAL.—A contract has been awarded to Joseph E. Nelson & Sons, Chicago, for the construction of a heavy inspection shop building for electric locomotives at Burnside, Chicago. The shop building will have dimensions of 166 ft. by 340 ft., and will cost approximately \$300,000, as reported in the *Railway Age* of April 10. A contract has also been awarded to Joseph E. Nelson & Sons for the construction of a temporary suburban passenger station at Randolph street, Chicago, at an estimated cost of approximately \$75,000.

LOUISVILLE & NASHVILLE.—Company forces will construct a bridge at Maunie, Ill., at a cost estimated at \$200,000. The contract for the fabrication of the steel spans for the bridge has been awarded to the American Bridge Company.

NEW YORK, WESTCHESTER & BOSTON.—A contract has been awarded to the Dwight P. Robinson Company, New York, for the extension of this company's double-track, electrified line from Mamaroneck, N. Y., to Harrison (1.7 miles).

NEW YORK CENTRAL.—Contracts have been awarded as follows: To the Railroad Supply Company, New York, for structural steel for a viaduct from St. Clair place to West 137th street, New York, estimated cost, \$260,000; to H. Du Bois Sons Company, New York, for dredging in the Hudson and Harlem Rivers, \$35,000; to the Edw. Joy Company, Syracuse, N. Y., for additions and alterations to piping and wiring in the power station

at Avis, Pa., \$25,000; to William M. Ballard, Inc., Syracuse, for reconstruction and alterations to boiler house at Avis, \$50,000; to the Page Steel & Wire Company, New York, for fencing between Sedgwick avenue and Getty square stations, Yonkers, N. Y., \$40,000; to the Jobson Gifford Company, New York, for the reconstruction of a bridge at Woodland, Pa., and strengthening a bridge at Lockport, N. Y., the former to cost approximately, \$80,000 and the latter approximately, \$45,000.

PENNSYLVANIA.—A contract has been awarded to the Pennsylvania Paving Company, Chester, Pa., for raising a bridge at Lloyd street, Lamokin, Pa. The company has awarded a contract to J. F. Brogan & Co., Philadelphia, for the removal of piers of the old bridge over the Susquehanna river at Linden, Pa. A contract has been awarded to the John F. Casey Company, Pittsburgh, Pa., for the construction of a new freight warehouse in that city at an approximate cost of \$60,000. The company has awarded a contract to the Turner Construction Company, New York, for the completion of the American Railway Express building at Long Island City, N. Y.; estimated cost, \$550,000.

PROVINCE OF ALBERTA.—A 25-mile branch line will be constructed from a point on the Edmonton, Dunvegan & British Columbia between West Lick and Busey, extending westward across the Pembina river in the direction of Fort Assiniboine.

ST. LOUIS-SAN FRANCISCO.—A contract has been awarded to Reed & Lowe, Birmingham, Ala., for the construction of 6 miles of track at Boggy Creek and Turpentine Hill, Ala. The line is being relocated to reduce grades and eliminate curves.

SOUTH GEORGIA.—The Interstate Commerce Commission has denied without prejudice this company's application for authority to construct a line from Hampton Springs, Fla., to Deadman's Bay, a distance of 35 miles.

SOUTHERN ILLINOIS & KENTUCKY.—A contract has been given to the Railroad Water and Coal Handling Company for the construction of a reinforced concrete coaling station of 500 tons' capacity at East Blufford, Ill.

UNION PACIFIC.—The Interstate Commerce Commission has authorized the construction of two branch lines in Scotts Bluff county, Neb., one from a point near Lyman in a southerly direction about 6 miles, with a branch extending southeasterly about 2 miles, and another from a point near Gering in a general southerly direction about 10 miles.

VENICE, ENGLEWOOD & SOUTHERN.—This company has been authorized by the Interstate Commerce Commission to construct a line from Venice, Fla., to Englewood, a distance of approximately 13 miles. The Seaboard Air Line proposes to acquire control of the company. The estimated cost of the line is placed at \$547,426.

Work on Hudson Bay Railway Started

Official announcement has been made at Ottawa that work has been started for the completion of the Hudson Bay Railway. After lying for ten years in a state of abandonment construction has been begun by the Canadian National, the federal government utilizing one-twelfth of the total vote of \$3,000,000 provided in the estimates for the current fiscal year for that work, and that \$250,000 has already been spent or pledged for purchase of materials. In a few days another one-twelfth will be asked from the House. An estimate of the total cost of building the remaining part of the road and of terminal facilities at Port Nelson on Hudson Bay has been prepared by Canadian National engineers and calls for an amount slightly in excess of \$6,000,000. It is divided as follows: to complete line to Kettle Rapids and to build divisional point facilities, \$3,000,000; to finish road from Kettle Rapids to Port Nelson and put the latter port in condition to handle business, \$3,000,000. While, in ordinary circumstances, the building of such a road is done by contract, it is not possible in the present case. If the vote had taken the form of a separate bill, then the contract method would have been possible, but the government, to prevent the Senate from killing the project, put an item for this road in the general Estimates, and moneys voted in the Estimates must be spent either by the government or through a government agency.

Railway Financial News

ALABAMA GREAT SOUTHERN.—1925 *Earnings*.—Annual report for 1925 shows net income after interest and other charges of \$2,998,348, equivalent after allowance for preferred dividends to \$17.64 per share on the \$50 par value ordinary stock. Net income in 1924 was \$2,163,250 or \$12.20 per share. Selected items from the income statement follow.

ALABAMA GREAT SOUTHERN	1925	1924
Railway operating revenues	\$10,433,271	\$10,093,450
Maintenance of way	\$1,345,526	\$1,439,706
Maintenance of equipment	1,883,124	2,084,705
Transportation	3,100,422	3,178,754
Total operating expenses	\$6,951,150	\$7,335,272
Operating ratio	73.54	78.20
Net revenue from operations.....	\$3,482,122	\$2,758,178
Railway tax accruals	717,973	554,690
Hire of equipment, net dr.....	413,061	429,078
Joint facility rents, net cr.....	174,655	141,967
Net railway operating income.....	\$2,999,281	\$2,487,078
Non-operating income	641,300	331,602
Gross income	\$3,640,581	\$2,818,680
Rent for leased roads.....	19,451	19,451
Interest on funded debt.....	614,222	629,332
Net income	\$2,998,348	\$2,163,256
Dividends on preferred stock	\$236,624	\$253,526
Dividends on ordinary stock.....	548,100	587,250
Surplus for year carried to profit and loss.....	\$2,213,623	\$1,322,480

ATLANTA, BIRMINGHAM & ATLANTIC.—*Sale Ordered*.—Federal District Judge Sibley of Atlanta has set May 14 for a hearing to determine whether the plan of reorganization under which the Atlantic Coast Line will take over the Atlanta, Birmingham & Atlantic would be fair to all interests concerned. The court's order for the sale of the road was entered over the protest of a group of stockholders. A date for the receipt of bids will be set by the special master and under the court's ruling the sale price must be \$2,500,000 above the claims of bondholders seeking foreclosure.

Under the plan whereby the Atlantic Coast Line will take over the property, it will reorganize the company and issue \$60 of new preferred stock with a guaranteed dividend of 5 per cent for each \$100 of bonds which are in default. The Coast Line would own all the common stock of the new company and the present common stock would be wiped out.

BUFFALO & SUSQUEHANNA.—1925 *Earnings*.—Annual report for 1925 shows net income after charges of \$79,033 equivalent to \$1.97 a share on the preferred stock. Net income in 1924 was \$318,929 equivalent after preferred dividends to \$5.29 a share on the common stock. Selected items from the income statement follow:

BUFFALO & SUSQUEHANNA	1925	1924	decrease or Increase
Average mileage operated.....	\$1,463,315	\$1,914,201	-\$450,887
Railway operating revenues	\$344,711	\$401,794	-\$57,084
Maintenance of way.....	562,264	798,346	-236,082
Maintenance of equipment	470,837	606,267	-135,430
Total operating expenses	\$1,509,971	\$1,941,348	-\$431,510
Operating ratio .....	.....	.....	.....
Net deficit from operations.....	\$46,656	\$27,146	-\$19,510
Railway tax accruals.....	36,446	43,747	-7,301
Railway operating deficit	\$83,126	\$71,029	-\$12,097
Non-operating income	\$398,607	\$628,974	-\$230,368
Gross income	\$315,481	\$557,945	-\$242,465
Interest on funded debt.....	194,325	200,546	-6,221
Total deductions from gross income.....	\$236,448	\$239,016	-\$2,568
Net income	\$79,033	\$318,930	-\$239,897
Income applied to sinking fund	\$69,295	\$63,074	6,221
Surplus for year carried to profit and loss	\$9,738	\$255,856	-\$246,118

CHESAPEAKE & OHIO.—*Minority Stockholders Lose Appeal*.—The Virginia Supreme Court of Appeals has denied the petition of the minority stockholders for an appeal from the ruling of Judge Moncure of the Chancery Court that the railroad had power to lease its properties, rights and franchises. Judge Moncure refused to enjoin the railroad from leasing its properties to the new Nickel Plate System and maintained that jurisdiction of the case belonged to the Interstate Commerce Commission.

CHICAGO, BURLINGTON & QUINCY.—1925 *Earnings*.—Annual report for 1925 shows net income after interest and other charges of \$21,184,593, equivalent to \$12.40 a share on the company's capital stock. Net income in 1924 was \$21,899,829 or \$12.81 a share. See excerpts from annual report on adjoining pages.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Bonds*.—Authority to issue nominally \$1,000,000 of first and general mortgage 5 per cent bonds, in exchange and cancellation of an equal amount of unsold 6 per cent bonds, to be held to be pledged from time to time as collateral for notes, is asked in an application filed with the Interstate Commerce Commission.

DULUTH, MISSABE & NORTHERN.—1925 *Earnings*.—Annual report for 1925 shows net income of \$6,887,370, equivalent to \$167.47 a share on the \$4,112,500 capital stock. Net earnings in 1924 were \$3,674,198 or \$89.34 a share. Selected items from the income statement follow:

DULUTH, MISSABE & NORTHERN	1925	1924	Increase or decrease
Railway operating revenues	\$18,054,509	\$13,856,099	\$4,198,410
Total operating expenses	\$8,220,970	\$7,507,186	\$713,784
Operating ratio	45.53	54.18	8.65
Net revenue from operations.....	\$9,833,539	\$6,348,913	\$3,484,626
Railway tax accruals	1,645,578	2,491,309	-845,731
Railway operating income.....	\$8,187,883	\$3,857,198	\$4,330,684
Net railway operating income.....	Not shown		
Gross income	\$8,985,447	\$4,645,223	\$4,340,224
Rent for leased roads.....	203,312	202,482	830
Interest on funded debt.....	396,797	421,469	-24,672
Total deductions from gross income..	\$2,098,077	\$971,024	\$1,127,052
Net income	\$6,887,370	\$3,674,198	\$3,213,172
Income applied to sinking and other reserve funds	\$1,061,245	.....	\$1,061,245
Surplus for year carried to profit and loss	\$5,826,125	\$3,674,198	\$2,151,927

ERIE.—*Abandonment of Branch*.—The New York, Lake Erie & Western Coal & Railroad Company, a leased line of the Erie, has been authorized by the Interstate Commerce Commission to abandon that portion of its so-called Toby Branch from Keyler's Corners, Pa., to Toby Mines, 2.3 miles. The operation of the mine has been abandoned.

IBERIA & VERMILLION.—*Acquisition of a Spur Track*.—This company has applied to the Interstate Commerce Commission for authority to acquire by purchase from the Erath Sugar Company a right of way and trackage to the amount of 12 miles through Erath, La. . . . The company expresses the opinion that this is a spur track for which no authority from the commission would be required but asks the commission to decide the point.

INTERNATIONAL RAILWAYS OF CENTRAL AMERICA.—*Notes Sold*.—The J. Henry Schroder Banking Corporation and Blyth, Witter & Co. have sold \$3,500,000 first mortgage collateral 6 per cent notes due May 1, 1941, at 96, to yield over 6.40 per cent. These notes will be secured by deposit with the trustee of first mortgage 5 per cent sinking fund gold bonds due May 1, 1972 of the International Railways of Central America which will be maintained so that the principal amount shall equal not less than 150 per cent and the market value shall equal not less than 110 per cent of the principal of all notes outstanding. The proceeds from the sale of the notes will be applied to financing the completion of 193 miles of railroad in Guatemala and Salvador and to purchase additional equipment.

KANSAS CITY SOUTHERN.—*Merger Progress*.—L. F. Loree, chairman of the board of directors, is quoted with reference to the proposed merger of the Kansas City Southern, the Missouri-Kansas-Texas and the St. Louis Southwestern, as follows:

"Our plan for unifying the three roads will not be the formation of a new parent or holding corporation, which will blot out the corporate identities of the present companies. Instead of that the Kansas City Southern will propose the absorption of a majority stock control of the Katy and Cotton Belt after the fashion in which the Union Pacific and the New York Central hold their subsidiary lines. The Kansas City Southern's procedure will follow lines more or less similar to those of the Wabash in taking over the Ann Arbor."

KANSAS CITY SOUTHERN.—1925 *Earnings.*—Preliminary Annual report for 1925 shows net income after interest and other charges of \$2,113,299, equivalent after allowance for the 4 per cent preferred dividends, to \$4.25 a share on the common stock. Net income in 1924 was \$1,981,803 or \$3.81 a share. Selected items from the income statement follow:

KANSAS CITY SOUTHERN		
	1925	1924
	Increase or decrease	
Average mileage operated.....	865.10	854.09
Railway operating revenues.....	\$21,165,155	\$21,024,012
Maintenance of way.....	\$2,843,100	\$2,972,755
Maintenance of equipment.....	3,473,567	3,858,494
Transportation.....	6,607,757	6,794,325
Total operating expenses.....	\$14,585,804	\$15,256,529
Operating ratio.....	75.30	78.66
Net revenue from operations.....	\$6,579,352	\$5,767,484
Railway tax accruals.....	1,350,568	1,280,811
Railway operating income.....	\$5,219,070	\$4,481,381
Equipment rates, net dr.....	\$587,317	\$555,208
Joint facility rents, net dr.....	138,328	61,796
Net railway operating income.....	\$4,493,426	\$3,864,377
Rent for leased roads.....	161,578	125,414
Interest on funded debt.....	2,062,832	1,899,587
Net income.....	\$2,113,299	\$1,981,803
Dividends 4 per cent on preferred stock.....	\$840,000	\$840,000
Surplus for year carried to profit and loss.....	\$1,273,299	\$1,141,803

LEHIGH & HUDSON RIVER.—1925 *Earnings.*—Annual report for 1925 shows net income of \$418,406 as compared with \$487,175 in 1924. Selected items from the income statement follow:

LEHIGH & HUDSON RIVER		
	1925	1924
Railway operating revenues.....	\$3,053,596	\$3,146,657
Railway operating expenses.....	2,237,097	2,240,096
Net revenue from railway operation.....	\$816,499	\$906,560
Railway tax accruals.....	155,504	165,917
Uncollectible railway revenues.....	18	101
Railway operating income.....	\$660,977	\$740,543
Non-operating income.....	40,710	39,938
Gross income.....	\$701,687	\$780,480
Deductions from gross income:		
Hire of equipment.....	146,683	150,322
Joint facility rents.....	135,903	140,350
Interest due and accrued.....	662	2,602
Miscellaneous charges.....	32	32
Total deductions from gross income.....	\$283,281	\$293,305
Net income transferred to profit and loss.....	418,406	487,175

LONG ISLAND.—1925 *Earnings.*—Annual report for 1925 shows net income of \$3,840,126, equivalent to \$11.25 per share on the capital stock. Net income in 1924 was \$1,976,584 or \$8.20 a share. Selected items from the income statement follow:

LONG ISLAND		
	1925	1924
	Increase or decrease	
Average mileage operated.....	397.10	397.10
Railway operating revenues.....	\$36,869,292	\$35,077,885
Maintenance of way.....	\$5,446,210	\$4,418,567
Maintenance of equipment.....	6,166,480	5,733,044
Transportation.....	14,099,458	15,338,177
Total operating expenses.....	\$26,972,032	\$26,680,854
Operating ratio.....	73.2	76.1
Net revenue from operations.....	\$9,897,260	\$8,397,031
Railway tax accruals.....	2,185,104	1,569,734
Railway operating income.....	\$7,686,930	\$6,803,595
Equipment rents—Dr. bal.....	\$749,022	\$651,719
Joint facility rents—Dr. bal.....	361,037	1,612,883
Net railway operating income.....	\$6,576,870	\$4,538,994
Non-operating income.....	629,518	642,844
Gross income.....	\$7,206,388	\$5,181,838
Rent for leased roads.....	104,084	178,801
Interest on funded debt.....	2,624,828	2,564,723
Total deductions from gross income..	\$3,366,262	\$3,205,254
Net income.....	\$3,840,126	\$1,976,584
	\$161,008	\$1,863,543

LOUISVILLE & NASHVILLE.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control, by purchase of the stock for \$300,000 and by lease, of the Cumberland & Manchester, which extends from Manchester, Ky., to Heidrick, 35 miles, and which, the application states, will complete an important connection between one of the divisions on the Kentucky River and the Cumberland Valley division.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—*Equipment Trust Certificates.*—The Interstate Commerce Commission has approved the issuance of \$1,020,000 equipment trust certificates, series M, paying 4½ per cent interest and maturing in equal amounts, semi-annually from November 1, 1926, to May 1, 1936. The certificates will be sold to the Pullman Car & Manufacturing Corporation at 97.79 per cent. The equipment includes 500 box cars, 100 gondola cars and 2 café-parlor cars, having a total approximate cost of \$1,372,519.

MOBILE & OHIO.—1925 *Earnings.*—Annual report for 1925 shows net income of \$2,187,623, equivalent to \$36.35 a share on the company's outstanding capital stock. Net income in 1924 was \$2,081,070 or \$34.58 a share. Selected items from the income statement follow:

MOBILE & OHIO		
	1925	1924
Average mileage operated.....	1,101	1,161
Railway operating revenues.....	\$19,255,064	\$19,464,381
Maintenance of way.....	\$2,809,052	\$2,847,032
Maintenance of equipment.....	3,282,239	3,538,048
Transportation.....	6,638,250	6,746,967
Total operating expenses.....	\$13,882,643	\$14,290,401
Operating ratio.....	72.10	73.42
Net revenue from operations.....	\$5,372,421	\$5,173,980
Railway tax accruals.....	1,152,829	1,062,373
Equipment rents, net cr.....	272,750	305,806
Joint facility rents, net cr.....	299,078	267,580
Net railway operating income.....	\$3,642,919	\$3,532,155
Non-operating income.....	167,651	121,265
Gross income.....	\$3,810,569	\$3,653,421
Interest on funded debt.....	1,605,990	1,552,752
Net income.....	\$2,187,623	\$2,081,070
Dividends, 10 per cent in 1925, 7 per cent in 1924.....	\$601,680	\$421,176
Surplus for year carried to profit and loss.....	\$1,585,943	\$1,659,894

MONTGOMERY & ERIE.—*Bonds.*—This company, a leased line of the Erie, has been authorized by the Interstate Commerce Commission, to extend from May 1, 1926, to May 1, 1956, the maturity date of \$130,000 first mortgage bonds.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—1925 *Earnings.*—Annual report for 1925 shows net income of \$2,529,042, equivalent to \$15.81 a share on the capital stock. Net income in 1924 was \$1,955,509 or \$12.22 a share. Selected items from the income statement follow:

NASHVILLE, CHATTANOOGA & ST. LOUIS		
	1925	1924
Average mileage operated.....	1,259.04	1,258.95
Railway operating revenues.....	\$24,000,050	\$23,601,646
Maintenance of way.....	\$3,486,474	\$3,573,811
Maintenance of equipment.....	5,215,623	5,325,381
Transportation.....	8,567,232	8,806,185
Total operating expenses.....	\$19,185,096	\$19,480,970
Operating ratio.....	79.94	82.54
Net revenue from operations.....	\$4,814,954	\$4,120,677
Railway tax accruals.....	759,516	651,900
Railway operating income.....	\$4,050,842	\$3,465,103
Equipment rents—Dr. bal.....	259,148	149,752
Joint facility rents—Cr. bal.....	146,111	118,415
Net railway operating income.....	\$3,937,805	\$3,433,767
Non-operating income.....	406,607	290,208
Gross income.....	\$4,344,412	\$3,723,975
Rent for leased roads.....	806,506	806,506
Interest on funded debt.....	929,216	940,556
Total deductions from gross income.....	\$1,815,370	\$1,768,466
Net income.....	\$2,529,042	\$1,955,509

NEW YORK, CHICAGO & ST. LOUIS AND CHESAPEAKE & OHIO.—*Interlocking Director Order Set Aside.*—Stating that there has now been brought to an end "all interlocking directorates" rela-

tionship" between the Nickel Plate and the Chesapeake & Ohio, the Interstate Commerce Commission has issued an order, with the consent of the parties, vacating and setting aside its order of January 27, 1923, under which the Van Sweringen brothers and five other directors of the Nickel Plate were authorized to hold positions also as directors of the Chesapeake & Ohio and its subsidiaries. The seven representatives of the Nickel Plate interests were substituted for a like number of the old board of the C. & O., and constituted a majority of the board. Minority stockholders of the C. & O., during the merger hearings, asked that the commission set aside the order and the proceeding was re-opened, but after the Nickel Plate merger application was denied M. J. Van Sweringen, J. J. Bernet, C. L. Bradley, W. A. Colston and J. R. Nutt resigned as officers and directors of the C. & O., and its affiliated companies, while O. P. Van Sweringen and Otto Miller resigned as officers and directors of the Nickel Plate and now hold no positions with any carriers other than the C. & O., and its affiliated companies.

ST. LOUIS SOUTHWESTERN.—New Director.—Walter E. Meyer, a New York attorney who has been collecting proxies from minority stockholders in connection with the contemplated acquisition of the Cotton Belt by the Kansas City Southern, has been elected a director, succeeding Winslow F. Pierce, resigned.

SOUTHERN PACIFIC.—Correction.—In the publication of the annual report of the Southern Pacific Lines and affiliated companies on page 1106 to 1113 of the *Railway Age* of April 13, there were unfortunately two errors as follows:

On page 1108 under the heading "Locomotive Fuel Performance" in the lower right-hand corner of the page, the descriptive heading "Pounds Fuel per 1,000 Gross Ton Miles" was omitted from immediately over the words "Passenger Service," without which heading the informative value of the tabulation was largely vitiated.

On page 1109, the first sentence of the second footnote immediately following "Assets" reads "† Inter-company interest on open accounts was discontinued as of December 31." The error in this instance consisted of the omission of the designation of the year which was 1924.

TEXAS & PACIFIC.—1925 Earnings.—Annual report for 1925 shows net income of \$3,821,555, equivalent after allowance for preferred dividends to \$6.80 a share on the common stock. Net income in 1924 was \$3,878,591 or \$6.94 a share. Selected items from the income statement follow:

TEXAS & PACIFIC			Increase or decrease
	1925	1924	
Average mileage operated	1952.96	1952.74	.02
Railway operating revenues	\$35,272,899	\$33,784,580	\$1,488,319
Maintenance of way	\$5,205,646	\$4,841,083	\$364,564
Maintenance of equipment.....	6,982,329	6,471,081	511,248
Transportation	12,363,073	11,589,114	773,959
Total operating expenses	\$26,453,802	\$25,242,324	\$1,211,478
Operating ratio	75.00	74.72	.....
Net revenue from operations.....	\$8,819,097	\$8,542,256	\$276,840
Railway tax accruals.....	1,917,500	1,837,500	80,000
Railway operating income.....	\$6,866,691	\$6,665,560	\$201,131
Hire of freight cars.....Dr. Bal	\$967,162	\$926,315	\$40,847
Joint facility rents.....Dr. Bal	37,455	81,039	-23,584
Net railway operating income.....	\$5,974,105	\$5,801,611	\$172,494
Non-operating income	373,137	346,103	27,034
Gross income	\$6,347,242	\$6,147,714	\$199,528
Interest on funded debt.....	2,413,255	2,170,339	242,916
Total deductions from gross income..	\$2,525,687	\$2,269,122	\$256,564
Net income	\$3,821,555	\$3,878,591	-\$57,036
Dividends on preferred stock....	\$1,185,150	\$707,798	\$477,352
Surplus for year carried to profit and loss	\$2,636,405	\$3,170,793	-\$534,388

TEXAS CITY TERMINALS.—Acquisition Reported.—It is reported that the Atchison, Topeka & Santa Fe, the Missouri Pacific and the Missouri-Kansas-Texas have acquired the property of the Texas City Terminals under a plan whereby each will own a third interest in the property.

Executives of North Western Railroads Criticized

A committee composed of Lewis B. Gawtry, W. Emlen Roosevelt, Van Santvoord Merle-Smith and T. H. Barber has addressed a letter to the holders of securities of the northwestern railroads pointing out that these security holders should organize independently of the railroad's management in order to secure a fair return upon the securities. A noteworthy feature of the letter is its criticism of the executives of the northwestern roads who, it is said, "cannot be relied upon to co-operate for the necessary rate relief." The letter reads in part as follows:

"Co-operative and direct action by security holders is forced by the facts. In the pending western district rate case it has been proved that the shrinkage in value of the securities of six large northwestern carriers in the last ten years is approximately \$1,000,000,000, based on market values. It was further proved that from 1911 to 1924 the seven major northwestern carriers put into their property \$952,000,000, an increase of 56 per cent in their investment account. It was proved that 84.6 per cent of all railroad bonds in default in the United States in 1925 were bonds of carriers dependent on the northwestern territory."

"The main cause of these ruinous conditions is the low rate structure in western trunk line territory north and east of the Missouri River. It was proved that in that region the rate structure is 15 per cent below that of the rest of the western district. If that low spot in rates had been filled to the average level of the western district, there need have been no bankruptcies of northwestern roads, and the solvent carriers would show a satisfactory earning power on the investment."

"It is unfortunately the case that the executive managements of the northwestern roads cannot be relied upon to co-operate for the necessary rate relief."

"A case in point was the acquiescence of the northwestern roads in the sudden reduction of the application for relief in the pending case from the equivalent of an 11 per cent increase to about 5 per cent. This change of front was made on the eve of the hearing, months after the original application for relief, although it was later conceded by every executive of a northwestern road who testified in the case that a 5 per cent increase would not be adequate for the northwestern lines. This failure of the executives to apply for adequate relief was apparently due to the threats of shippers, the domination of powerful roads in other sections of the West and to the inability of the northwestern executives to unite and stand together to protect the common interests of their roads."

Average Price of Stocks and Bonds

	May 4	Last Week	Last Year
Average price of 20 representative railway stocks	89.65	91.31	79.91
Average price of 20 representative railway bonds	95.66	96.13	91.00

Dividends Declared

Cleveland & Pittsburgh.—Guaranteed, \$87 1/2, quarterly; special guaranteed, \$.50, quarterly, both payable June 1 to holders of record May 10.

Delaware & Hudson.—2 1/4 per cent, quarterly, payable June 21 to holders of record May 28.

Lehigh Coal & Navigation Company.—2 per cent, quarterly, payable May 29 to holders of record April 30.

New York, Chicago & St. Louis.—Common, 2 1/4 per cent; preferred 1 1/2 per cent, quarterly, both payable July 1 to holders of record April 15.

Norfolk & Western.—Common, 1 1/4 per cent, quarterly, payable June 19 to holders of record May 29.

Pennsylvania Company.—1 1/2 per cent, quarterly, payable April 30 to holders of record April 28.

Pennsylvania Railroad.—1 1/2 per cent, quarterly, payable May 29 to holders of record May 1.

Western Railway of Alabama.—4 per cent, payable June 30 to holders of record June 20.

Valuation Reports

The Interstate Commerce Commission has issued final and tentative valuation reports finding value for ratemaking purposes of the property owned and used for common-carrier purposes as of the respective valuation dates as follows:

FINAL REPORTS		
Abilene & Southern.....	\$830,577	1918
Hannibal Connecting.....	104,000	1918
Minneapolis, Red Lake & Manitoba.....	567,090	1918
Sault Ste. Marie Bridge Company.....	500,750	1916
South Georgia.....	657,800	1917
Ware Shoals.....	618	1916
White River.....	329,223	1917
Wiscasset, Waterville & Farmington.....	500,168	1916
Yreka.....	103,142	1917
Warren & Ouachita Valley.....	245,360	1918

TENTATIVE REPORTS		
Charleston Union Station Company.....	274,226	1917
Milwaukee Terminal.....	703,000	1918
Pierre, Rapid City & Northwestern.....	4,528,054	1917
Tacoma Eastern.....	3,064,500	1918
Tucson, Cornelia & Sila Bend.....	762,500	1917

Annual Report

Chicago, Burlington & Quincy R. R. Co.—Seventy-Second Annual Report

Chicago, January 2, 1926.

To the Stockholders of the Chicago, Burlington & Quincy Railroad Company:

The following is the report of your Board of Directors for the year ended December 31, 1925:

Comparative Statement of Income, Years Ended December 31

Percent of Ry. Oper.	RAILWAY OPERATING REVENUES 1925	Percent of Ry. Oper. Revenue	RAILWAY OPERATING EXPENSES 1924	Percent of Ry. Oper. Revenue
74.56	\$118,670,808.08	Freight	\$119,773,873.05	73.63
15.78	25,116,398.38	Passenger	26,522,641.75	16.30
2.63	4,188,505.54	Mail	4,294,717.60	2.64
2.46	3,911,481.37	Express	4,321,328.29	2.66
2.79	4,431,329.18	All other transportation	4,961,483.55	3.05
1.56	2,489,168.46	Incidental	2,467,916.41	1.52
.22	347,496.94	Joint facility	332,917.33	.29
100.00	\$159,155,177.95	Total railway operating revenues	\$162,674,877.98	100.00
		RAILWAY OPERATING EXPENSES		
12.40	\$19,737,011.24	Maintenance of ways and structures	\$19,413,916.56	11.93
21.16	33,669,420.12	Maintenance of equipment	34,786,169.62	21.38
1.88	2,993,579.69	Traffic	2,877,617.90	1.77
34.57	55,021,562.37	Transportation	57,810,257.64	35.54
1.00	1,587,033.11	Miscellaneous operations	1,670,213.94	1.03
2.74	4,365,866.83	General	4,217,049.42	2.59
Cr. 44	Cr. 702,605.76	Transportation for investment—Credit	Cr. 816,490.89	Cr. 50
73.31	\$116,671,868.12	Total railway operating expenses	\$119,958,734.19	73.74
26.69	\$42,483,309.83	Net revenue from railway operations	\$42,716,143.79	26.26
....	\$10,975,481.17	Railway tax accruals	\$10,642,575.78	....
....	49,943.49	Uncollectible railway revenue	75,473.68	....
....	\$31,457,885.17	Railway operating income	\$31,998,094.33	....
		NON-OPERATING INCOME		
....	\$751,035.43	Hire of equipment	\$601,936.98	....
....	537,072.46	Joint facility rent income	570,443.05	....
....	634,658.79	Miscellaneous rent income	601,838.77	....
....	1,365,608.95	Dividends and miscellaneous interest	1,429,225.48	....
....	78,674.82	Miscellaneous income	83,024.26	....
....	\$3,367,050.45	Total non-operating income	\$3,286,468.54	....
....	\$34,824,935.62	Gross income	\$35,284,562.87	....
		DEDUCTIONS FROM GROSS INCOME		
....	\$2,067,174.10	Hire of equipment	\$2,583,282.01	....
....	2,546,901.21	Joint facility rents	1,845,080.03	....
....	179,474.93	Miscellaneous rents	175,705.41	....
....	8,693,293.76	Interest on funded debt	8,641,439.46	....
....	41,954.75	Interest on unfunded debt	28,521.91	....
....	110,543.40	Amortization of discount on funded debt	108,705.25	....
....	1,000.00	Miscellaneous income charges	2,000.00	....
....	\$13,640,342.15	Total deductions from gross income	\$13,384,734.07	....
....	\$28,131,917.75	Net railway operating income (See table on page 34)	\$28,742,112.32	....
....	\$21,184,593.47	Net income	\$21,899,828.80	....
		DISPOSITION OF NET INCOME		
....	\$293,500.50	Sinking funds	\$293,930.48	....
....	17,083,785.00	Dividends	17,083,765.00	....
....	\$17,377,285.50	Total appropriations of income	\$17,377,695.48	....
....	\$3,807,307.97	Income balance transferred to profit and loss	\$4,522,133.32	....

Capitalization

Capital Stock:

During the year the only change in Capital Stock was the conversion of \$100 of scrip into one share of stock.

Of the total amount outstanding \$170,839,100 \$1,200 was represented by fractional stock scrip convertible, in multiples of \$100, into full shares. This scrip is not entitled to vote or to receive dividends until so converted.

[ADVERTISEMENT]

Dividends paid during the year:

June 25, 1925, 5% on \$170,837.800	.....	\$8,541,890
December 26, 1925, 5% on 170,837,900	.....	8,541,895
Total (all charged to Income for the year) . . . . .	.....	\$17,083,785

Funded Debt:

On December 31, 1924, the Funded Debt outstanding in the hands of the public was \$212,300,000 During the year 1925 the following changes were made:

By the purchase of Nebraska Extension Mortgage Sinking Fund Bonds of 1927	\$556,000
By the retirement of Equipment Trust Gold Notes matured January 15, 1925	404,000
Total deduction	\$960,000

On December 31, 1925, the Funded Debt outstanding in the hands of the public was \$211,340,000

General Operations

Revenues:

Total Operating Revenues for 1925	\$159,155,177.95
Total Operating Revenues for 1924	162,674,877.98
Decrease	\$3,519,700.03 2.16%

The decrease was made up as follows:

Freight	Decreased	\$1,103,064.97	.92%
Passenger	Decreased	1,406,243.37	5.30%
Express	Decreased	409,846.92	9.48%
Other Transportation Revenues	Decreased	636,366.43	6.87%
Demurrage	Decreased	35,299.95	8.29%
Other Incidental Operating Revenues	Increased	71,121.61	2.99%
Total Decrease		\$3,519,700.03	2.16%

Measured by tons and ton miles of revenue freight as shown below, the freight traffic of the Company the past year varied little from that of the year 1924, but the decrease in freight revenue of \$1,103,064.97 is attributable to some change in the character of the tonnage handled. There was a decrease of 40,075 carloads of grain and grain products, and a decrease of 26,779 carloads of livestock, as contrasted with an increase of 18,687 carloads of coal and an increase of 50,990 carloads of miscellaneous freight traffic. Decrease in the freight revenue on grain was \$4,580,435, and was attributable to light yield of wheat in 1925 in our territory and in the southwest. The loss in revenue on livestock amounted to \$1,075,630, accounted for by the shortage of the corn crop in the year 1924 and the high prices prevailing during the latter part of that year, which resulted in a substantial reduction in amount of livestock on farms, particularly hogs in the Spring of 1925. The movement of hogs during the year 1925 shows a reduction of 23,422 cars, compared with the preceding year.

The total products of mines increased 1,694,936 tons, or 9.67% attributable principally to the increased movement of bituminous coal. The suspension of operations in the anthracite fields which began about September 1, 1925, and continued for some time thereafter constituted a factor in the increase in the movement of bituminous coal because it resulted in a greater absorption of eastern bituminous coal by eastern markets than would otherwise have been the case, and improved western market conditions for Illinois and other middle western coal. There was a decrease in the movement of coal from Southern Illinois to Wisconsin and Minnesota, particularly to the Twin Cities, as a result of an advance in rates required by the decision of the Interstate Commerce Commission in the Lake Dock Coal cases, but in the remainder of the territory served by our lines, coal from Illinois mines showed a substantial increase, due not only to the effect of the anthracite strike, but also to the high rate of industrial activity in our territory, which was indicated by an increase of 7.08% in the tonnage of manufactured products moved on our lines during the year. Practically all of the classes of manufactured products moved in increased volume; the movement of automobiles, trucks and agricultural implements being one of the largest in the history of the railroad.

The movement of clay, gravel, sand and stone was the largest in our history, increasing 22.4% over the preceding year, which itself set a record for this class of business. This latter class of freight, however, while materially increasing the tonnage handled, did not result in a corresponding increase in revenue, because it moves comparatively short distances, and at low rates.

A comparison of tonnage with 1924 commodities handled shows the following:

Products of Agriculture.....	Decreased	1,525,372 tons	16.15%
Animals and Products.....	Decreased	252,546 tons	7.90%
Products of Mines.....	Increased	1,694,936 tons	9.67%
Products of Forest.....	Increased	32,842 tons	1.41%
Manufactured Products	Increased	605,707 tons	7.08%
Less-than-carload tonnage	Decreased	25,009 tons	1.46%

Total tonnage Increased 530,558 tons 1.24%

A comparison of carloads shows:

Total Cars (all commodities) in 1925.....	1,394,884 cars
Total Cars (all commodities) in 1924.....	1,392,061 cars
Increase in 1925.....	2,823 cars .20%

The decrease in passenger revenue was brought about by the increased use of privately owned and publicly operated automobiles. We carried 1,205,193 less revenue passengers than in 1924, a decrease of 6.6%, as compared with a decrease of 1.7% for the same period, in the number of passenger miles, evidencing the loss of short-haul traffic. The average haul per passenger, exclusive of commutation service, increased 11 miles over the preceding year. The average revenue per passenger mile decreased, due principally to an increase in our summer tourist business and week-end excursions, the latter being operated during 1925 on a cent-a-mile basis. Gross earnings resulting from the operation of week-end excursions amounted to \$155,404. The Burlington Tour Bureau, operated in co-operation with the Great Northern and Northern Pacific, was also established during the year and taking into consideration the fact that it was the first year, the venture was considered quite successful. Chicago District commutation traffic continues to grow, the passenger miles in this traffic showing an increase of 3.73% over the preceding year.

Operating Statistics:

Tons of revenue freight carried, 1925.....	43,308,852
Tons of revenue freight carried, 1924.....	42,778,294
Increase	530,558 1.24%
Revenue tons one mile, 1925.....	12,298,287,741
Revenue tons one mile, 1924.....	12,287,747,806
Increase	10,539,935 0.09%
Revenue tons per train mile, 1925.....	668.89
Revenue tons per train mile, 1924.....	647.80
Increase	21.09 3.26%
Revenue tons per loaded car, 1925.....	23.35
Revenue tons per loaded car, 1924.....	23.71
Decrease .....	.36 1.52%
Average revenue per ton mile (cents), 1925.....	.965
Average revenue per ton mile (cents), 1924.....	.975
Decrease .....	.010 1.03%
Average distance hauled per revenue ton (miles), 1925.....	283.97
Average distance hauled per revenue ton (miles), 1924.....	287.24
Decrease	3.27 1.14%
Revenue passengers carried, 1925.....	16,879,540
Revenue passengers carried, 1924.....	18,084,733
Decrease	1,205,193 6.66%
Revenue passengers carried one mile, 1925.....	893,669,925
Revenue passengers carried one mile, 1924.....	909,302,487
Decrease	15,632,562 1.72%
Average distance carried, revenue passengers, 1925.....	52.94
Average distance carried, revenue passengers, 1924.....	50.28
Increase	2.66 5.29%

Expenditures (Operating):

Total operating expenses, 1925.....	\$116,671,868.12
Total operating expenses, 1924.....	119,958,734.19

Decrease

The reduction of \$3,286,866.07 in Operating Expenses was the result of increased efficiency and a continued policy of rigid economy in all departments. Transportation Expenses were reduced \$2,788,694.75 or 4.82% and this in spite of an increase of .09% in the net ton miles of revenue freight carried. The largest individual decrease in the above total was obtained in locomotive fuel which was reduced \$1,687,305.18 or 12.94%, although the decrease in the average price of coal purchased was only 5.29% and the decrease in total train miles amounted to 2.11%.

The amount paid Station Employees decreased \$152,604.68. This was the result of a careful check of each position on the road, the elimination of overtime through rearrangements of force, and similar methods all the result of careful and thorough supervision in an endeavor to bring the operating performance to the most efficient point possible under existing conditions. The remainder of the decrease in transportation expenses was distributed through a large number of items in the classified accounts.

Industrial:

The year 1925 was another period of pronounced industrial activity and expansion in our territory, a total of 414 new industrial leases being executed and new industrial tracks being constructed and extended as follows:

	New tracks	Extensions
On Lines East of the Missouri River.....	33	23
On Lines West of the Missouri River.....	3	10
Total	36	33

New industries located on our tracks total 339 and sixteen large existing industries made additions and extensions.

The building and engineering contracts let in our territory during the year surpassed all previous records, the development in this respect as to residential, business and commercial building being very pronounced, with our Chicago suburban territory showing a greatly increased expansion. During the year construction work was started on the extension of an industrial track in May Street, Peoria, the total length of which will be approximately 5,000 feet, and when completed will give us exclusive track connection with twelve substantial going industries. This track also means the development of an entirely new industrial district and offers most satisfactory promise of a largely increased traffic.

Agricultural:

Continued improvement has been evidenced in farming conditions during 1925. Notwithstanding the unfavorable newspaper publicity given agricultural conditions, which has had a tendency to check investment in farm lands, there has been a renewed interest and an appreciable increase in prices of farm lands on lines west. Considerable time was devoted to working with the various communities to bring about renewed confidence in their particular localities. Many communities are now working together for further development and settlement. Assistance was given in the preparation and distribution of new booklets describing agricultural opportunities in Custer and Red Willow counties, Nebraska, and Phillips County, Colorado. These counties, as well as Northeastern Wyoming, and the Big Horn Basin, Wyoming, where local agencies have united in the organization of the Big Horn Basin Colonization Association, have been advertised.

Three thousand three hundred eighteen inquiries about land and settlement opportunities were received in 1925; 10,756 letters and 23,750 pieces of literature were mailed in response to these and previous inquiries. Five hundred eighty-three carloads of emigrants' effects were received on the Alliance, McCook, Sheridan, Casper, and Sterling divisions, compared to 649 cars last year. There has been an increase in the acreage of government lands open to homestead entry in Wyoming, due to many cancellations under expiration notices. No large amount of irrigation construction work was carried on during the past year. The U. S. Reclamation Service holds that additional legislation is necessary to provide selective method of choosing settlers for irrigated homesteads and to secure loans for settlers who are qualified. There are approximately 1,000,000 acres of land suitable for irrigation awaiting development in Wyoming.

A number of educational campaigns demonstrating better methods of farming to increase production were conducted during the year. A wheat smut prevention campaign was conducted in eastern Colorado and western Nebraska. A special sugar beet demonstration car, operated in beet producing sections, aided in bringing about the greatest average tonnage ever produced. Attention was given to demonstrating methods of retaining and increasing soil fertility; eighty sweet clover tests were established in eastern Colorado. Sulphur fertilizer experiments were established in Nebraska, Colorado, and Wyoming, to test the fertilizing value of this product. Soy beans were introduced in the Big Horn Basin. The corn acreage in the Big Horn Basin was extended to 9,000 acres in 1925; in 1922 the acreage was only 1,500 acres. Increased corn production has proved a great stimulus to diversified farming in this section, resulting in a marked increase in live stock feeding and turkey production. Assistance was given to growers in marketing western Nebraska certified seed potatoes, for which the demand proved to be greater than the supply. Personal inspections were made of pure bred sires distributed in Colorado in 1923 and in Nebraska in 1924. A check on the pure bred sires traded for scrubs from the special train in Colorado showed that 18% of the recipients had purchased pure bred cows; 88% reported a definite improvement in the quality of their calves; 86% were completely satisfied with the sires; 72% reported an improvement in the quality of live stock in their communities and a general stimulation of the industry as a result of the special train.

During 1925 agricultural representatives attended and in most cases took part in the programs of a large number of meetings of civic and real estate organizations, as well as meetings of farm, community, county, state and national organizations working for better agricultural conditions. Newspaper articles were prepared covering a wide range of subjects along the lines of agricultural development.

During the past year the Company has benefited greatly by the efficient service rendered and loyalty shown by its officers and employees, and the management hereby expresses its appreciation of the interest thus shown in the welfare of the Company.

By order of the Board of Directors.

HALE HOLDEN,
President.

Railway Officers

Executive

Charles H. Sommer has been elected president of the Quanah, Acme & Pacific, succeeding **S. Lazarus**, deceased.

R. M. Dozier, president of the Union Railways and of the Memphis Union Station Company, Memphis, Tenn., has been appointed also executive general agent of the Missouri Pacific, with the same headquarters.

Financial, Legal and Accounting

H. E. Beckway has been appointed auditor of equipment accounts of the Southern Pacific, lines in Texas and Louisiana, with headquarters at Houston, Tex., succeeding **J. W. Comiskey**, deceased.

Operating

A. S. Critchfield has been appointed trainmaster of the Lake Superior division of the Northern Pacific, with headquarters at Duluth, Minn.

W. F. Bemister has been appointed supervisor of fire protection of the western region of the Canadian National, with headquarters at Winnipeg, Man., succeeding **W. J. F. Craig**, deceased.

G. C. Kennedy, superintendent of the De Quincy division of the Gulf Coast Lines, with headquarters at De Quincy, La., has been given extended jurisdiction to include the Lake Charles district of the Louisiana division of the Missouri Pacific, with the same headquarters.

L. C. McBride, superintendent of the Alliance division of the Chicago, Burlington & Quincy, with headquarters at Alliance, Neb., has been transferred to the McCook division, with headquarters at McCook, Neb., succeeding **M. F. MacLaren**, who has resigned. **L. O. Murdock** has been appointed superintendent of the Alliance division in place of Mr. McBride.

Fred Meyers, superintendent of the Chicago Terminal division of the Wabash, with headquarters at Chicago, has been promoted to assistant superintendent of transportation, with headquarters at St. Louis, Mo., a newly created position. **Earl Haney**, trainmaster, with headquarters at Peru, Ind., has been promoted to superintendent of the Chicago Terminal division, in place of Mr. Meyers. **L. A. High** has been appointed trainmaster at Peru, succeeding Mr. Haney.

H. L. Margetts has been appointed superintendent of the Canada division of the Michigan Central, with headquarters at St. Thomas, Ont., succeeding **D. W. Donahue**, who has retired. **Frank McElroy** has been appointed assistant superintendent of the West division, with headquarters at Niles, Mich., succeeding Mr. Margetts. **F. W. Cowley** has been appointed trainmaster of the Canada division, with headquarters at St. Thomas, Ont., succeeding Mr. McElroy. **J. W. McGowan** has been appointed trainmaster of the Canada division, with headquarters at Windsor, Ont. **C. C. Hardison** has been appointed assistant trainmaster of the Canada division, with headquarters at Niagara Falls, Ont., succeeding Mr. Cowley. **C. J. Burroughs** has been appointed trainmaster of the Detroit division and the Detroit passenger terminals, with headquarters at Detroit, Mich., succeeding **B. H. Winans**, who is on leave of absence.

F. W. Urbahns, superintendent of the Fond du Lac division of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Fond du Lac, Wis., has been appointed superintendent of the newly created Chicago Terminal division, with headquarters at Chicago. The Chicago Terminal division includes the line from Chicago to Schiller Park, which was formerly a part of the Fond du Lac division. **W. W. Wade**,

superintendent of the Stevens Point division, with headquarters at Stevens Point, Wis., has been transferred to the Fond du Lac division, in place of Mr. Urbahns. **E. H. Buhlman**, superintendent of the Duluth-Superior division, with headquarters at Superior, Wis., has been transferred to the Stevens Point division, succeeding Mr. Wade. **W. H. Corbett**, superintendent of the Gladstone division, with headquarters at Gladstone, Mich., has been transferred to the Duluth-Superior division in place of Mr. Buhlman. **A. H. Mann** has been appointed superintendent of the Gladstone division, succeeding Mr. Corbett. **C. L. Simpson**, assistant superintendent, with headquarters at Chicago, has been transferred to the Minnesota division, with headquarters at Harvey, N. D.

O. E. Coyne, superintendent of the Illinois division of the Missouri Pacific, with headquarters at Illmo, Mo., has been transferred to the Missouri division, with headquarters at Poplar Bluff, Mo., succeeding **C. C. Chapman**, who in turn replaces Mr. Coyne on the Illinois division. **H. S. Grant** has been appointed transportation assistant, with headquarters at St. Louis, Mo. **C. A. Fink**, trainmaster of the Arkansas division, with headquarters at Little Rock, Ark., has been transferred to the Southern Kansas division, with headquarters at Coffeyville, Kan., succeeding **C. W. Pace**, promoted. **F. L. Hays**, trainmaster of the Central division, with headquarters at Van Buren, Ark., has been transferred to the Arkansas division in place of Mr. Fink. **C. A. Forbes**, trainmaster of the White River division, succeeding Mr. Forbes. **W. P. Hayes**, has been transferred to the Central division in place of Mr. Hays. **R. L. Hardgraves** has been appointed trainmaster of the White River division, succeeding Mr. Forbes. **W. P. Hayes**, trainmaster on the Arkansas division, with headquarters at Little Rock, Ark., has been transferred to the Missouri division, with headquarters at Poplar Bluff, Mo., succeeding **H. F. Galbreath**, who in turn succeeds Mr. Hayes on the Arkansas division.

Traffic

Vernon Gaston has been appointed general freight agent of the Fort Smith & Western.

V. A. Wholey, who has been appointed general traffic manager of the Pittsburgh & West Virginia, with headquarters at Pittsburgh, Pa., was born on February 18, 1890, at Pittsburgh,

Pa., and was educated in the Pittsburgh high school. He entered railway service on June 1, 1906, as a mail boy for the Wheeling & Lake Erie and the Wabash Pittsburgh Terminal Railway (now a part of the Pittsburgh & West Virginia). From July, 1908, until December, 1908, he was car record clerk for the same roads, and from January, 1909, to April, 1909, he was a clerk in the freight department of the Wabash Pittsburgh Terminal Railway. In May, 1909, he became clerk in the voucher department of the same

road, and from June, 1911, until May, 1919, he held various positions in the accounting department. In June, 1919, Mr. Wholey became corporate auditor for the Wabash Pittsburgh Terminal Railway and the Pittsburgh & West Virginia, which position he held until April, 1920, when he became general accountant for the Pittsburgh & West Virginia. In May, 1924, Mr. Wholey was appointed general agent, with headquarters at Cleveland, Ohio, which position he was holding at the time of his recent appointment to general traffic manager.

F. R. Darby has been appointed division freight agent of the Elkins division of the Western Maryland, with headquar-



V. A. Wholey

ters at Cumberland, Md., succeeding **J. F. Getty**, who has retired.

E. J. Hendry, traveling agent of the Southern Pacific, with headquarters at Seattle, Wash., has been promoted to general agent, with headquarters at Vancouver, B. C., in charge of a newly established agency.

G. L. Oliver, traffic manager of the Ft. Smith & Western, with headquarters at Ft. Smith, Ark., has been appointed traffic manager of the Muscle Shoals, Birmingham & Pensacola, with headquarters at Pensacola, Fla.

E. Mathern, general agent of the Chicago, Milwaukee & St. Paul, with headquarters at Winnipeg, Canada, has been transferred in the same capacity to Portland, Ore., succeeding **R. L. Ford** and **J. M. Cunningham** has been appointed general agent at Winnipeg, succeeding Mr. Mathern.

P. W. Heroy, general eastern passenger agent of the Central of New Jersey, has retired on his own request. **Howard E. Simpson** has been appointed general eastern passenger agent, with headquarters at New York, and **Alfred Kubli** has been appointed district passenger agent, with headquarters at Newark, N. J.

J. F. Bahl, general agent passenger department of the Chicago, Milwaukee & St. Paul, with headquarters at Seattle, Wash., has been promoted to assistant general passenger agent, with the same headquarters, succeeding **A. P. Chapman, Jr.**, who has been appointed general agent, with headquarters at Victoria, B. C. **R. E. Carson**, city passenger agent, with headquarters at Spokane, Wash., has been promoted to general agent at Seattle, in place of Mr. Bahl. **A. A. Wilshon** has been appointed assistant general freight agent, with headquarters at Seattle, succeeding **F. J. Calkins**, who has been appointed general agent, with headquarters at Vancouver, B. C., succeeding **J. M. Cunningham**.

Engineering, Maintenance of Way and Signaling

Harry S. Jones, who has been appointed valuation engineer of the Gulf, Mobile & Northern, with headquarters at Mobile, Ala., was born December 11, 1864, at Marion, Ohio, and was educated at Ohio State University. He entered railway service in August, 1885, as a rodman on the Illinois Central, and from June, 1886, to January, 1891, he was division engineer on the Chicago, Rock Island & Pacific. From February, 1891, until April, 1893, he was successively city engineer at Marion, Ohio, and deputy county surveyor for Marion County, Ohio, and from April, 1893, until May, 1894, he was general foreman on the construction of the lines from Columbus to Sandusky, Ohio. From June, 1894, to February, 1897, he was in private practice. In April, 1897, Mr. Jones became assistant chief engineer of the Mobile & Ohio, and treasurer and manager of the Montgomery Suburban Street Railway Company, a subsidiary of the Mobile & Ohio, and in May, 1901, he became chief engineer of the Mobile, Jackson & Kansas City (now a part of the Gulf, Mobile & Northern). From November, 1903, to March, 1904, he did special work for the general manager of the same road, and from the latter date until April, 1905, he was in private practice. In April, 1905, Mr. Jones became chief engineer and general superintendent of the Mobile, Jackson & Kansas City, and from May, 1908, to January, 1909, he was assistant engineer of the Mis-



H. S. Jones

souri Pacific. He was out of railway service for several years, but returned again in April, 1911, as division engineer and special engineer on valuation work for the Mobile & Ohio. In March, 1920, he became valuation engineer for the Gulf, Mobile & Northern, and in October of the same year became chief engineer, which position he was holding at the time of his recent appointment.

A. R. Jones has been appointed division engineer of the Pennsylvania division of the New York Central and the Ottawa & New York, with headquarters at Jersey Shore, Pa. **S. E. Armstrong** has been appointed division engineer of the River division, with headquarters at Weehawken, N. J., and **E. R. Tattershall** has been appointed division engineer of the St. Lawrence division, with headquarters at Watertown, N. Y.

H. Israel, division engineer of the Kansas City Terminal division of the Missouri Pacific, with headquarters at Kansas City, Mo., has been transferred to the Illinois division, with headquarters at Illmo, Mo., succeeding **R. H. Holm**. **R. G. Bush**, assistant division engineer of the Colorado division, with headquarters at Hoisington, Kan., has been promoted to division engineer of the Kansas City Terminal division in place of Mr. Israel. **W. F. Murray** has been appointed assistant division engineer of the Colorado division, succeeding Mr. Bush.

Mechanical

W. H. Fowler has been appointed general car foreman of the Southern Pacific, lines in Texas and Louisiana, with headquarters at Houston, Tex., succeeding **J. D. Freeman**, who has retired.

F. W. Gratiot, road foreman of engines of the Eastern division of the Missouri Pacific, with headquarters at Jefferson City, Mo., has been transferred to the White River division, with headquarters at Aurora, Mo. **F. W. Foltz** has been appointed road foreman of engines of the Eastern division, succeeding Mr. Gratiot.

Obituary

A. L. Robinson, assistant to the general manager of the Wabash, with headquarters at St. Louis, Mo., died at Decatur, Ill., on April 28, after an operation.

J. P. Brogan, assistant master car builder of the Delaware, Lackawanna & Western, with headquarters at Hoboken, N. J., died suddenly in Florida on May 3.

Henry C. Thompson, division engineer of the New York Central, with headquarters at Weehawken, N. J., died at his home in Bogota, N. J., on April 13.

William J. Tobin, freight claim agent of the Wabash, with headquarters at St. Louis, Mo., died suddenly on April 28 on a Wabash train en route from Kansas City, Mo., to St. Louis, Mo.

Arthur Crable, assistant to the chief engineer of the Hocking Valley, who died on January 8, 1926, was born on April 20, 1879, at Bay City, Mich. He was graduated from the civil engineering department of Ohio State University in 1901, and from June, 1901, to March, 1903, he served in the engineering department of the Baltimore & Ohio, at Zanesville, Ohio. From the latter date until October, 1903, he was resident engineer for the Great Northern Construction Company at Dayton, Ohio. He then served with the Erie until June, 1907, as assistant engineer at Cleveland, Ohio, and division engineer at Huntington, Ind. He was connected with the engineering department of the city of Columbus, and acted as sewer inspector until February, 1908, at which time he entered the service of the Hocking Valley as assistant engineer. Mr. Crable was successively engineer of grade separation, division engineer, engineer maintenance of way and assistant to the chief engineer, which position he was holding at the time of his death.